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With Respects of H. J. Bigelow

INTRODUCTORY LECTURE

DELIVERED AT THE

MASSACHUSETTS MEDICAL COLLEGE,

NOVEMBER 6th, 1849.

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By HENRY J. BIGELOW, M.D.,

PROFESSOR OF SURGERY IN HARVARD UNIVERSITY.

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1850.

Boston, Nov. 9, 1849.

To the Professor of Surgery in Harvard University.

SIR :—At a meeting of the Medical Class of Harvard University, held yesterday morning, a Committee was appointed to request, for publication, a copy of your Introductory Address, delivered at the commencement of the present course of Lectures.

The undersigned have the honor to constitute that Committee ; and in the hope that the solicitation will be agreeable to yourself and complied with at your earliest convenience,

Are, with the highest respect and esteem,

Your obedient servants,

HENRY CLARKE,
C. H. HILDRETH,
R. N. HODGES, JR., } COMMITTEE.

GENTLEMEN :—I have the honor to acknowledge the receipt of your note of the 9th inst., requesting, in behalf of the Medical Class, a copy of the Introductory Lecture delivered before them.

I beg to assure you of my high appreciation of this honor, and it gives me great pleasure to comply with the request.

With great respect,

Your very ob't friend and servant,

HENRY J. BIGELOW.

To HENRY CLARKE,
C. H. HILDRETH,
R. N. HODGES, JR., } *Committee of the Medical Class.*

Nov. 10th, 5 CHAUNCEY PLACE.

INTRODUCTORY LECTURE.

GENTLEMEN OF THE MEDICAL CLASS:—

WE are assembled in obedience to a healthy custom. It is well that those who are interested in this institution, should meet together once in the year, to testify their good will to it, and to indicate by their presence that they feel an interest in its prosperity. We recognize here the guardians of the University; the flourishing condition of which is ample evidence of the fidelity and wisdom of their administration. Here are those who, at no remote period, were actively engaged in teaching the lessons of our art; indelibly associated with a pleasant period of our lives, and bound to many of us by claims to more than our regard. Some who look back as if it were yesterday to the time when like yourselves they stood at the threshold of our profession; when they imbibed at this fountain the early teachings of our science; come here to be reminded by each recurring year, of the lengthening interval which separates them from a period which never can return, and to awaken its memories. Winter has assembled you from various distances and with various motives; animated by curiosity or impelled by duty; determined to accomplish an end, or yielding to a customary routine; but all imbued with a good and friendly spirit, and ready to unite with the well-wishers of our institution, to promote its best interests.

Occupying a relation to you, gentlemen, new to myself, and of the honor of which I am deeply sensible, there may be a propriety in devoting an hour, usually allotted to considerations of a general character, to an exposition of some of the principal topics suggested by this relation; and it is my intention, with your permission, briefly to review our subject in its connections with science, and with the community.

The Institutes of Surgery are its settled principles; and if we consider the character of the phenomena which are presented to us in the study of this science, and reflect how unappreciable are the agencies which constitute disease, we have good reason to be satisfied that there is any thing in a successive generalization so remote as to be called a principle, or so unequivocal in its character as to be considered settled, in our science.

In this division of our subject, where generalization is broadest, let us avow that we still linger upon the lower steps of scientific progress. The phenomena of fever or of convulsive action, bring us but little nearer to their immaterial cause. More than this, we are but little nearer to their material machinery. A man dies of tetanus, and in a large proportion of cases you can find no lesion of his nervous organism. Fever has been grouped into inflammatory, irritative, and hectic, because febrile symptoms tend to recur in certain groups characterized by one or more constituent symptoms, predominant in intensity and duration. Perfect knowledge should demonstrate the intimate mechanism of each symptom; yet we possess no such knowledge. The inward fire is kindled, and the thrill and the restless play of an unknown machinery warn us of a never-ceasing elaboration; but we stand without the edifice, and only gaze bewildered at the complicated manifestations of its exterior. We have only learned that certain occurrences are probable, but do not know why they are probable.

And leaving the symptoms, which are the result of lesions, for the material lesions themselves, we are, indeed, nearer to the fountain-head of morbid action. But here, too, the investigation of the simple fact, divested of its relations to proximate cause, is the boundary of our research. Phlegmon, and erysipelas, and ulceration, represented in color and in outline, in duration and transition; scrofula and cancer, each uniting somewhat heterogeneous groups of very various phases; these furnish subjects of what may be called the institutes or settled principles of surgery. That they are combinations of frequent occurrence cannot be denied; and we may concede that, from the constancy of their recurrence in a state of combination, they may be fairly inferred to have some common bond of union maintaining to them the attitude of cause; but we have not extracted or identified this common principle; and science falls short of its perfection, by the wide interval which separates suspicion from a certainty.

The broader generalizations have often reached a second class. Thus, having grouped the different symptoms of inflammation, we again unite the phlegmonous and erysipelatous varieties by whatever is common to them both; still it may ultimately prove that their discrepancies preponderate; that we have not yet touched their real point of sympathy or of difference; and that we misappreciate the actual value of characters which may prove accidental. It is a striking fact, that a writer of the Augustan age should have indicated the marks of inflammation as four—"redness and swelling, together with heat and pain;" and that, till within a very recent period, medicine has added little to elucidate this fundamental process of disease. But medicine must ever follow behind Chemistry, and Physiology, and Anatomy; it may propel, but it can only follow them into the threshold of discovery.

Palliate it as we will, few pathological principles are entitled to that name. There is a broad line between material phenomena and their immaterial cause. The pathologist scrutinizes the gross tissue, subjects it to mechanical force, and to chemical reaction, he disintegrates as much of it as will lie upon a needle's point; he bends the rays which emanate

from only a small portion of this particle, until the image of a single cell shadows a large portion of his retina ; and still the surrounding fluid is reflected pure and crystalline. Far more impalpable than this hyaline fluid, is some heavy air, and far more subtle still is light, and again, at an unmeasurable interval, the vital force. Short of this point, our generation may surely rest satisfied ; and content itself, for years of progress yet to come, with such investigation of material changes as exaggerated vision may afford, and such improved speculation upon them as may be made through the aid of collateral progress in the kindred sciences.

It has come to be questioned how far Clinical Instruction is essential to a course of medical teaching. Local interests or local exigencies have led to a discussion of the value of this method of imparting knowledge, and as seriously as if there were some doubt about it. Surely those who hesitate, do not consider the difference between words and things ; between the aspect of a man himself and such a detailed description of him as the police might give ; between visible and tangible disease, and a written history of it. No doubt an original fact and its description both gain access to the understanding ; but there is a difference in the quality of the knowledge thus obtained. To value a possession, the mind must first have felt the want of it. Curiosity must first stimulate both its perception and its ability to retain. The mind asks a question, and is then polarized for the reception of a direct answer ; and it is balked and wearied by an irrelevant reply. Now every protracted description, especially a lecture, is of the nature of a series of replies to which no question has been asked. A whole audience cannot ask or be answered at one time, and the alternative is to distribute information in bulk, that each may select something which will approximate his purpose.

On the other hand, exhibit a case of actual disease, and every observer will put and answer in his own mind, and with the rapidity of thought, an endless variety of queries upon points in which, perhaps, he alone is deficient, and for the reception of which his mind alone is stimulated.

Another point is more important. Sensible qualities must be described by reference to acknowledged standards ; and we can thus measure heat, and space, and weight ; but not shades of color, nor the attributes soft and hard, nor the varying outline of a curve. In the same way a personal examination will yield the qualities of an odor, a pulse, a tumor, an expression of the features, which pages of tedious description might fail to do. And the mind which painfully contemplates an abstraction, will seldom fail, at such a moment, to arrest some tangible association by which the abstract quality is permanently fixed.

Clinical study is bed study. Here the student closes and grapples with the malady of whose Protean forms he has as yet only read. Here he learns at once the language of disease and the language of suffering humanity ; and while his scientific sense is educated, his kindlier feelings are also developed. He learns to listen patiently, to sympathise ; he learns to reëstablish a facility in the manifestation of that stratum of kindly feeling which is generally upon the surface in early youth, but which some-

times, in the process of education, gets imbedded beneath a show of indifference and insensibility.

The dialect of disease is an especial object of clinical study. Is a fever settled? Is a cough seated on the lungs? Is there water on the brain? Such questions are as significant as if conveyed in the language of recondite science. On the other hand, there are propositions less intimately according with modern views. What is the cause of this? asks one. Is this a scrofula humor? Is it in my constitution? These, or even the vexed question of biliousness, may well perplex the votary of rigid science. Such querists suppose the physician to possess a truly intimate knowledge of the human frame. In the words of Sir Thomas Browne, two hundred years ago, "They foolishly conceive we visibly behold therein the anatomy of every particle, and can thereby indigitate their diseases; and running into any demands, expect from us a sudden resolution in things whereon the Devil of Delphos would demur; and we know hath taken respite of some days to answer easier questions."

The language of symptoms leads us directly to the threshold of our science. The evidence afforded to the physician by signs and symptoms, may contradict the positive assertion of the patient. But it is not on that account to be rejected. The rigid exactitude of Louis would not overrate the statement of a patient when it contravened a probability derived from previous experience. Disease has been observed for a great length of time to repeat itself in certain forms. Cancer of the breast precedes the affection in the axilla. But suppose a patient to insist that the reverse had taken place; it is quite evident that a fact so unusual must be well established before we can accept it. Nature, indeed, is under a tacit contract of probability always to do as she has already done. Her character for honesty of performance is established, and the burden of proof is on the individual to show, by collateral or some other especial evidence, that nature is this time at fault.

It is then quite evident that, in questioning a patient, whose testimony is not exempt from human fallibility, I must have some standard with which to gauge the accuracy of his statements; to compel him, as it were, either to conform, in his rendered account, to some one of a series of regular moulds of disease, which I alternately present to him, or to show good reason for not doing so. It is therefore necessary that I should be familiar with the standards by which I am to gauge his statements; and these standards are the result of my researches into the previously recognized order of nature. I have thus learned that nature has the habit of grouping certain symptoms together, which we then call by the names of individual diseases.

To illustrate this: if a man has certain symptoms of laryngitis, I examine him to ascertain if the lungs are the seat of a primary tubercular affection. If not, I abandon this hypothesis, and treat the affection as a local one. If treatment is again without success, I may form a new hypothesis, perhaps in favor of an aneurismal tumor pressing on the nerves of laryngeal motion; a disease of which Mr. Liston actually died. Let it then be well established, that in studying a case the mind is active; that it is not the time bestowed upon its examination: especially that it

is not the protracted consideration with which a pulse is held and counted, nor the attention with which a tongue is scrutinized, that throws light upon the disease ; but a previous and full knowledge of the usual combinations of symptoms which enables the observer to recognize any especial combination as one which has occurred before, and which has been before identified. On the other hand, it may be satisfactory to know, that certain symptoms are sometimes united, which have not been before observed together, and which the assembled faculty of the civilized world could not interpret.

There is a word in frequent use, in connection with medical practice, the true value and import of which it is essential to understand—the word *opinion*. It is used to indicate the sentence passed upon disease, and is popularly said to be *pronounced* by the physician. A man's medical opinion is quoted in the community, in proportion to his combined force of character and professional notoriety. Yet these elements of popular position are often quite distinct from pure scientific ability, and it is important to separate them from it and to understand them. Scientific acquirement, which is sometimes quite a different thing from professional notoriety, should be the only standard of professional opinion, and would be so were medicine an exact science, or could medical opinion be at once tested. An opinion is, in fact, the result of judgment, and judgment must be informed and enlightened. Opinion now differs from that of former days, because science is now built up of many accurate facts, which must be known, to form a ground of inference ; and it is valuable just in proportion to a man's natural ability for judging, and to his knowledge of the rules of disease by which the case is to be tested.

Let us consider the process of forming a diagnosis ; presupposing the observer to be sufficiently familiar with disease to identify with certainty, any common union or succession of symptoms. If such combination actually exist in the case under consideration, the question is settled, and the diagnosis is made up from positive evidence.

But it more frequently happens that certain signs are wanting ; that a part only of the usual symptoms are found, and that the case is proportionably obscure in its indications. A certain tumor often resembles many other tumors ; and we find no obvious characteristics to identify it. Instead of looking further for positive evidence which cannot be had, the observer then avails himself of what negative evidence the case may afford, and makes what has been called an eliminative diagnosis, a diagnosis by exclusion. He considers what diseases are capable of presenting the actual symptoms before him, and examining each in its turn, rejects or eliminates the less probable. A difficult case is thus brought, in general, within two, or, at most, three alternatives ; time often supplies additional evidence, which serves to complete the indications, or if not, it is impossible to get nearer the truth. The comparison of symptoms which resemble each other, and especially of similar combinations, is called by the French the "*diagnostic raisonné*," in which the question of similarities and of differences in the symptoms of disease, is stated with reference to the application of the eliminative diagnosis in any especial case.

It is quite obvious that the observer must possess a knowledge of all the possibilities in a case before he can choose among them ; that if he fail to

identify a tumor by its positive signs, and is then in consequence obliged to select among the entire range of lesions of this class, he must possess a comprehensive knowledge of all tumors, in order that he may invoke each in its turn, and test by it the affection which is ultimately to be identified.

A rounded tumor of the cellular tissue, not peculiar in its appearance, was presented to Velpeau, who avowed his belief that it was a foetal growth; in other words, that it was material belonging to the body of another individual, which was accidentally buried beneath the skin of the patient under examination. So remarkable an opinion excited much attention, especially when the extirpation of the mass verified the diagnosis. But examine the evidence upon which it was based. This tumor was completely destitute of sensation, and was invested with a most singular skin. All ordinary growths are susceptible of cutaneous sensibility. This tumor was then not likely to be a growth of any ordinary description. So far the evidence is negative. But a lock of hair projected through a fistulous opening from its interior. It was doubtless this lock of hair, not uncommon in foetal growths, that laid the ground-work of a positive hypothesis, which the facts of insensibility and of peculiar skin, negative in regard to all other tumors, now confirmed. Add to this the tumor was congenital, it exuded an oily matter, neither serum nor pus; and to answer to the well-known fact that such tumors often contain bone, there was a central density which might well be osseous. Such facts led to the belief that this lesion was identical with a few others, of rare occurrence, which the wide study and tenacious memory of this surgeon supplied to him; and upon this probability, the diagnosis was founded.

Thus the mind, laden with a group of symptoms, oscillates among the combinations with which our experience of the rules of nature has furnished it, attracted by resemblances, repelled by differences, again returning, in despair of finding better, to hypotheses which, at first, seemed to be untenable, until at last it settles where the probability is strongest. And it is the part of clinical instruction to indicate these journeys of the mind in words; to detain thought, which ever tends to hurry on, and is loth to retrace its steps, while the obliquity of its original wanderings is made evident. And the student may be safely abandoned to himself, when he is at once master of the few well-beaten tracks of daily diagnosis, and familiar with the system upon which they are projected.

Before leaving the subject of clinical study, let us consider the value of the popular assertion that it educates the senses. How does it educate the senses? Is the eye of an artist, who should chance to study medicine, likely to be educated by the blush of inflammation, or the red of hectic? Will the capacity of an average olfactory be probably developed by an experience of gangrene or of porrigio? Is the tactile sense refined by the wave of ascites, or the fluctuation of an abscess? Consider this very point of tact, by which the fluctuation of deep-seated fluid is detected. To doubt its existence will be cardinal heresy in the eyes of many, who consider it a leading attribute of a skilful surgeon. According to my own humble experience, fluid cannot be identified by the touch alone. A cyst may be so hard that it differs in its sensible properties

from a solid body, in translucency alone, fluctuation being entirely wanting. On the other hand, a solid fibrous tumor, especially an encephaloid growth, may offer a fluctuation so unequivocal, that no man, from this sign alone, would be justified in doubting the existence of subjacent fluid.

This must be obvious. Fluctuation implies displacement. The parietes of a contained fluid may be so tense and unimpressible, that you can displace nothing; while, on the other hand, certain soft solid and elastic tissues may perfectly fulfil the required conditions. So it is with the blow of a blunt edge upon the scalp. The tissue of each side may rise in such a way, that while an inexperienced person would be quite sure of the existence of fracture of the bone, when it did not exist, a skilful surgeon could only pause and doubt. Whence comes, then, the accuracy of diagnosis, which in general is referred to tact, and which characterizes skill?

Leclerc, who wrote more than two hundred years ago, draws a line which in these latter days seems to have been lost sight of. He says,

“How may it be discovered that the two tables of the skull are broken?”

“By inspection and by reasoning.”

“Are not the eyes sufficient alone, and are they not more certain than reasoning?”

“Yes. But forasmuch as things are not always seen, there is often a necessity of making use of rational deductions, to find out that which the eyes cannot discern.”

When probability is substituted for certainty, an informed judgment is our only resource.

In the kindred and beautiful science of auscultation, a new rôle is learned like a new landmark; not by any especial development of the sense, but by a repeated act of observation, and a corresponding effort of the memory. And wherever two or three of these landmarks can be observed, an immediate inference can be made with respect to the condition of the patient. An experienced auscultor decides rapidly and at once; not because his ear is more acute, but because his memory is better stored; and he can thus assort and appraise more readily his hypothetic combinations. A skilful surgeon detects fluid, not because his tactile papillæ are more sensitive, but because his ready knowledge furnishes him with natural groups of symptoms, which now exaggerate and now discountenance the value he would attach to the indications of the tactile sense. Surgical tact, like social tact, is not only the delicate impressibility which apprises the observer of some manifestation in the individual with whom he is in relation, but it is a correct inference of its true cause and character, leading to appropriate action, and based upon a knowledge at once of collateral circumstances, and of man's physical and moral constitution.

Operative Surgery is another department of our art. Here “Anatomy and Mechanics,” in the words of Boerhæave, “both better and more universally understood in our Days, have laid the foundations, and spun the Thread of our Reasonings; both of them sure!” In operative surgery we occupy more directly what is popularly considered to be the province

of the surgeon. The surgeon, with the public, is associated with surgical operations ; and his notoriety is in measure with the belief which the world may entertain of the number or magnitude of the operations he may perform. Singular as it may seem, a surgical operation, even in the medical world, is apt to be looked upon with an undue appreciation ; and even eminent physicians concede an unquestioned position to a skilful operating surgeon. So true is this, that for acquiring the notoriety which is a nucleus for surgical practice, a surgeon had better sometimes be known as the hero of extraordinary operations which have proved unsuccessful, or even fatal, than as a follower of the usual routine of ordinary treatment.

This has always been true of the surgeon. In earlier times, when the art was in its infancy, the successes of the surgeon were more exclusively than now connected with manipulation. Besides, the art was confined to few, being, in a measure, hereditary, or transmitted from master to some favorite pupil. It partook of the exaggerated and exclusive spirit of alchemy, being admired rather than exactly estimated.

Much of this spirit of exaggeration still invests the science. Why is the amphitheatre crowded to the roof, by adepts as well as students, on the occasion of some great operation, while the silent working of some well-directed drug excites comparatively little comment ? Mark the hushed breath, the fearful intensity of silence, when the blade pierces the tissues, and the blood of the unhappy sufferer wells up to the surface. Animal sense is always fascinated by the presence of animal suffering. It is the trace in man of the emotion which the sight of blood, of laceration, or of death, produces in the lower animals. But, beyond this, there is an arbitrary interest and an arbitrary importance attached to the performance of most surgical operations, in my view disproportioned to their intrinsic merit. It is rare that supply does not respond to demand ; and, in obedience to a general expectation, the surgeon is prone to foster and to encourage the undue appreciation which the public is ready to concede. The error, indeed, if it be one, lies with the community itself, which offers a sure market for surgical pretension ; but the effect upon the professional world is not less to be regretted. From a habit of modifying his standard to an eager curiosity, a surgeon may easily lose his own standard, and fall into the mistake of exaggerating a case in the presence of those who are competent themselves to judge ; an error growing out of an habitual illusion, and entirely dissonant with his tact and good judgment upon other subjects.

As we have now perhaps reached the kernel of our proper subject, let us inquire, somewhat in detail, what is the actual and intrinsic merit of a surgical operation. I do not hesitate to avow a belief that the great majority of mere surgical manipulations require less skill and less manual experience, than the nicer mechanical manipulations of daily industry, which excite little attention. This estimate does not include the three years of preparatory study, common both to the physician and the surgeon, but only the peculiar and usual training of the operating surgeon. Few, who have studied our art in Paris, can have failed to be struck with the number of aspirants singularly adroit in the various methods of performing surgical operations upon the dead subject, still practising mani-

pulations, week after week, and year after year, but never destined to make their skill available; and who soon sink beneath the surface in the tumult of competition, to be succeeded by others of equal skill. The operating surgeon should add something to mere dexterity of manipulation. "A surgeon," says Celsus, meaning an operating surgeon, "ought to be young, or at most but middle aged; to have a strong and steady hand, never subject to tremble, and to be no less dexterous with his left than with his right hand; to have a quick and clear sight; to be bold, and so far devoid of pity that he may have only in view the cure of him whom he has taken in hand, and not in compassion to his cries, either make more haste than the case requires, or cut less than is necessary; but do all as if he was not moved by the shrieks of his patient." "These irregular operations," says Liston, speaking of tumors of the neck, "require, on the part of the surgeon, correct anatomical knowledge, prudence, coolness, decision, and some share of dexterity; qualifications only to be gained by practice and experience." Here is something beyond manual adroitness. I have noticed in Europe, where opportunities for comparison are frequent, that the crisis of an operation,—when the wound gapes and the bleeding is free, and the end is not yet in view,—sometimes induced in the operator a constitutional excitement and haste, a want of steadiness which threatened to hazard success, were the operation protracted beyond its natural and anticipated period. Fortunately, at this time, difficulties are surmounted, and the end begins. This contrasts unfavorably with the physical immobility, the unimpressible steadiness, that may be relied on at a critical time; or with the self-possession which may be directed, at a moment's warning, to the quiet contemplation of some new exigency. I should place a constitutional, or acquired imperturbability, at the head of the qualities to be prized by the operating surgeon. Decision and self-reliance are next, and then a fertility in expedients. Bell describes an operator, destitute of these qualifications, as "agitated, miserable, trembling, hesitating in the midst of difficulties, turning round to his friends for that support which should come from within." "Although the chair of surgery has been, for seventeen years, entrusted to me," says the renowned Haller, "although I have frequently demonstrated the most difficult surgical operations upon the dead body, yet I could never bear to cut a living man, fearing that I might do him injury." With such evidence of its attendant excitement, it will be conceded that there is a fascination in a game where life is a not unfrequent stake, in the presence of a breathless multitude, or in the solitude of an appalled household. It is not wonderful that Wiseman wrote of "the nobility and dignity of chirurgery," and Hildanus of its "grace and splendor;" neither is it remarkable that surgery, in these days, should offer a resistless charm to the majority of students. And yet these attractions can be abated. It should be remembered that, with some operators, a natural insensibility, and even brutality, is a substitute for the simple steadiness of the humane surgeon. And besides this, there are shoulder-joints and hips amputated, and extraordinary operations satisfactorily done by those whose names are not destined to outlive the number of the Journal which reports them, and whom accident or temerity has urged into an unwonted position. Again,

the result of an operation is often no test of the skill invested in it. Nature is a great leveller, and among a hundred amputated limbs, it would be difficult to distinguish the original result of consummate skill, from that of only moderate ability. A traveller upon the lakes tells us of a thoroughbred Indian, who, when a tree had fallen across his leg, took out his knife, cut off his own leg, bound it up, and paddled himself home to his wigwam, on a distant island, where the cure of his wound was completed. Johannes Lethæus, having sent his wife to the fish-market, extracted from his own person a calculus weighing four ounces. Nature is the great surgeon, and art is at best but an assistant. It is also well to remember, that a dexterous operator might perform single-handed, and in a few weeks, a large proportion of the operations occurring in a large city, in the course of a whole year; so that, as a question of mere expediency, based upon the frequency of surgical opportunity, it is profitable for the student to throw his labor into the scale upon whose preponderance his daily occupation will, for a long time, depend. Such considerations will not discourage genius, which is talent with a marked taste to direct, and a strong driving power to work it; nor should they dissuade those whose deliberate judgment may have determined them to pursue this art. It is, however, unquestionably better for most students to aim at being competent pathologists and physicians, than to devote a disproportionate time to the various methods of performing an amputation of rare occurrence. Besides, in estimating the true position of an operator, we are to weigh the contingencies of an operation, and not its regular and successive steps. It is quite obvious that a novice might attain exquisite adroitness in any given manipulation; but unexpected deviation of anatomy or disease, abundant and sudden hemorrhage, violence, syncope, the panic of bystanders, the lack of aid, these adventitious circumstances call for distinct qualifications; and it follows that a patient is actually less safe in the hands of one who is not familiar with exigencies and expedients.

It has been proposed to separate the Science from the Art of surgical manipulation. This can never be; the involved interests are too great; and, although we meet in other walks of life presence of mind and ready concentration of the faculties to which are apparently entrusted equal interests with slighter guarantee, yet the helmsman or the engineer stakes his own life with that of the passenger, who confides not in his skill alone, but in his instinct of self-preservation. The surgeon risks nothing; and the patient confides in a character to which the lapse of time has testified.

Still, upon ground peculiar to the surgeon, we arrive at another consideration of importance—the evidence which, in each case, determines an operation. And here, again, is the field for the exercise of the higher faculty of sound discrimination. It is unnecessary to allude to cases in which the propriety of action admits of no doubt. Common sarcoma and common lipoma, in active state, and in a healthy patient, are usually extirpated, and with permanent relief. Cancer, on the other hand, as inevitably returns at a subsequent period, and generally to prove fatal. In such a case, the contingencies on either side may be thus briefly stated. In default of excision, acute pain wearing the patient down,

recurring and exhausting hemorrhage, the apprehension or actual existence of local disintegration with its accompanying calamities, which, together or singly, may render life a burden ;—on the other hand, a chance of a permanent local removal of these terrible local symptoms, with a chance of their local return,—a chance of not affecting the duration of life, with a chance of abbreviating it,—these are the difficult elements of the question which it often falls to the lot of the surgeon to determine. Human life is a question of deep responsibility. “ You must die as you are, and an operation will give you a chance ;” or more exactly, “ You can live but a few months in your present state, and with an operation you have an equal chance of sudden death and of permanent recovery,”—this is a frequent and responsible alternative. To one man, life is inexpressibly dear. He would live a short month longer for himself, for his child, for his estate ; while the defenceless woman, whose existence is embittered by disease which awakens a groundless but withering suspicion, would give a world to cast off a weary burden, and strives, by sophistry, to make the surgeon her executioner. Here the physician and the surgeon occupy a widely different ground. While the physician so adjusts his remedies, that if they do no good, they do no harm, the surgeon is unhappily compelled to see many a death accelerated, or directly caused, by his remedial agents.

Pain, but recently an object of insuperable terror, once prohibited many operations. The quivering and straining muscle and the deep groan of fortitude, or the thrilling shriek of agony, which resolution could not stifle, then invested surgery with a sad solemnity. In these days, the surgeon has a lighter task. The rising vapor stimulates and stupefies the intellect, whose fantastic clamor may excite a not uncharitable smile ; but the operator, with a conviction that alarms are groundless, lulls his patient to a quiet slumber. In other times, a fear of pain coöperated with a fear of death, to resist an indiscriminate attack upon the stronghold of disease. In the annihilation of pain, let not an equal force be now brought to bear against vitality alone. The balance of surgical right has been shaken to its centre by the annihilation of an element whose preponderance may be truly said, in a majority of cases, to have turned the scale ; and years must elapse before a standard of expediency can be adjusted. In the meantime, let the burden of proof lie with the patient ; let the surgeon avoid operating when he can do so ; and, at least, let him consider how far he would himself be ready to encounter, in his own proper person, the risks presented by each recurring case. Years, too, must elapse before the surgeon will cease, as he must ultimately cease, to be identified with pain ; and, as years elapse, the anæsthetic will excite as little speculation upon mysterious agencies, as now the quill which shields the individual from a pestilence. But it matters little that a great principle should cease to excite remark because it is of vulgar application. I care not whether the well-worn story, fretted by hostile pertinacity, palls upon the ear. When the petty jealousies which opposed, and the obstinate consistency which still makes show of doubting, shall have been forgotten ; when we, with our estates and our institutions, shall be scattered to the winds of

heaven ; when nations shall have been disintegrated, and their material wrought and rewrought into the organism of successive ages, it will be remembered that the discovery which annulled the physical suffering of man, was made at Boston, in America.

I wish, in this connection, to allude to another subject which is acquiring an increasing importance in our community. I allude to the practice of deciding questions of a purely medical and scientific character, by appeal to a legal, and medically unqualified, tribunal. A man receives a blow upon his watch or upon his window, and submits to a jury the following three questions : first, the fact of the blow ; second, the connection between the blow and the injury received ; and lastly, the extent of the injury. It is plain that the second question, of the casual relation of the blow to the injury, is, in this case, absurd ; the effect of a stone upon a pane of glass is too obvious to be discussed—it is a question of every day experience. But suppose that a severe blow has been received upon the head, and that a man thus assailed has fallen dead. The connection between the blow and the ensuing death, though quite obvious, nevertheless trenches upon peculiar ground. It is customary, in such a case, to invite the opinion of an expert, who would not however hesitate here to recognize a frequent cause, and an equally frequent effect. But let us go a step further, and suppose the blow to have been followed, instead of death, by some derangement of the physical or mental functions. A man shown to have previously possessed less than an average share of intellect, complains after such injury of an impairment of the memory. A sickly child, with many symptoms of diseased spine, finds that the disease is unequivocal, some time after receiving a slight concussion. These are cases which have actually gone through the courts, claiming remuneration. An accident happens ; a man receives a considerable jar ; and if he subsequently experience obscure pain, or short breath, or epileptic fits, or any symptoms of which the proximate machinery is utterly and profoundly inexplicable, he does not hesitate at once to accuse individuals, railroads or towns, and to prosecute for damages. It is plain that, to establish his case, he must show the connection between cause and effect ; between the stone and the broken glass ; between a blow upon the shoulder and a permanent pain perhaps in the leg. Before whom is the question brought to issue ? Not before a jury who have spent a lifetime in acquiring an intimate knowledge of the physical mechanism of the human body and the causes and consequences of its derangement ; men who have ascertained that nothing in medicine is certain, and that, for the lack of certainty, every question must be decided, if at all, upon its probabilities, and who are accustomed to the balance of these probabilities. This intricate question is not thus brought to issue ; but is laid before twelve average minds, taken at random from the common walks of life, profoundly ignorant of medicine, or equally imbued with prejudice, and who are to be educated in a few days upon points which most intelligent students, after two or three years' exclusive study, would avow themselves unprepared to decide. This is not a question of the rights of inert property, nor of

the modifications of mechanical force, nor of abstract right and wrong, nor of a fact of occurrence, nor of any other subject which the general education of daily life renders men competent to settle ; but it is a question of recondite and peculiar knowledge. And to submit such a question to most men, is to submit the figures of the planet Neptune to an optician because he owns a telescope, or to refer the question of pregnancy to a jury of matrons.

Unable itself to draw any inference from medical facts which it cannot comprehend, a jury is supposed in theory to make an average of the results at which experts have arrived, in informing itself of the opinions of physicans and surgeons. Here, however, is another fruitful source of error ; on the one hand, human testimony is not rendered less uncertain in an uncertain science, by the insensible influence of conflicting medical interests, especially in small communities ; and on the other, the public at large is totally incompetent in any case to estimate the relative scientific value of medical testimony. There is also a tendency among juries taken from the mass of the community, to side with the professedly oppressed. Wealth, incorporated or unincorporated, does not invite equal sympathy. Here is a bias. And in this refracted light, medical opinions of unequal value readily neutralize each other. Probability, too often the substitute of certainty in medicine, is exaggerated ; or still worse, it is in some cases enough to show that a symptom might possibly have followed an accident ; and the burden of proof is virtually thrown upon the defendant to show that it actually did not. The defendant is then guilty, until he proves his innocence.

Now almost any thing may occur in medicine. The most fantastic possibilities actually do occur. For instance, a good sized crowbar was shot through a man's brain, and he recovered. Another patient had an ulcer itching excessively upon his thigh ; whenever he scratched it, he experienced extreme tightness of the chest and dyspnœa, and only then. The father of Lord Cavendish had a pain in the left arm connected with a stone in the bladder, and the only knowledge which he had of the necessity of micturition, was the recurrence of this pain. With such facts as possible, and these are perhaps solitary instances of their kind, what can be absolutely denied ? Now, let two or three doctors testify before a jury, that, when a railroad car stops suddenly, it is barely possible that any passenger may be taken, for the first time, with an epileptic fit ; and let as many medical witnesses testify, on the other side, that it is indeed possible, but that causal evidence upon this point is altogether wanting ; let them avow with John Hunter, in an analogous case, that they "can give no decided answer," and the verdict, as in that case, will very likely go against the defendant, and this in default of any corresponding medical probability whatever.

It may be a matter of policy, to compel a railroad to pay for every accident to life or limb ; and so to remunerate a road for travel, that it can also afford to insure the safety of its passengers. It is a very serious question, how far, upon grounds of mere expediency, a patient may prosecute his surgeon for mal-practice. On the one hand, gross injustice and ingratitude are occasionally exhibited towards the surgeon. He is made

to suffer for deformities which could not be prevented.* Besides, a patient, residing in a thinly settled country, who employs a local surgeon, virtually says, "I have, on the whole, decided to place myself under your care; you may not have the opportunities of a surgeon in a large metropolis, but there is neither time, nor can I meet the expense of sending to a distance. I am therefore prepared to incur the chances of recovery with such aid as you may offer, and on such pecuniary terms as are customary in this part of the country;" and he has no right subsequently to complain. On the other hand, the chance of being mulcted for gross inefficiency, is a chief preventive of ignorant pretension. It is the only means of hindering certain practitioners from assuming duties, to which they are not competent. These, however, are questions of practical expediency, differing widely from that of scientific right and wrong. Tested by the single standard of surgical truth and error, I believe injustice to be often done to individuals and to corporations; and if poisoning, infanticide, and analogous crimes, have created a science of medical jurisprudence, I know not why surgical injuries do not demand an equally, perhaps more extended science, of surgical jurisprudence.

Let us establish a position in relation to Empiricism. It is usual to reserve feeling, or at least, declamation, for those who are considered hostile to the interests of the true medical faith. And there is apology for an unfriendly feeling, and reason for the antagonistic attitude usually manifested towards quackery by our profession. Those who occupy a firm position in established medical centres, unquestionably encounter it more rarely, and feel its influence less, than those whose medical practice lies in thinly settled districts, or among less educated classes. The public opinion of large communities is very apt to be well ballasted by common sense; while in small communities, agitated by minor interests, medical, political and religious faith are almost equally subjects of difference and change of opinion; and the interests of medical men are, as often, very seriously affected. It is, therefore, the duty of every medical man, to discountenance quackery; the only question being how far and in what way this may be accomplished. Laws to repress it have existed at various times. Stowe, in his *Chronicles*, says, "A counterfeit doctor was set on horseback, his face to the horse's tail, the same in his hand as a bridle, a collar of jordans about his neck, a whetstone on his breast, and so led through the city of London with ringing of basons, and banished." The present French law is stringent against charlatans in medicine. And yet quackery has always existed; and, what is extraordinary, barren of invention, treading in a monotonous round, a thousand times exposed, and as often presenting itself anew with the same threadbare pretences, yet always receiving the same encouragement. Here are the natural bone-setters of 1579. "Here," says Ambrose Paré, "I determine to treat of those impostors who, taking upon them the person of a chirurgion, do, by

* This resort to law has become so familiar, that it seems to suggest itself, at once, to every country patient who is dissatisfied with the deformity of a fracture or a dislocation. I am persuaded that patients often leave metropolitan institutions, where they have been treated with skill and care, who would, in the country, be able to make a strong legal case of distortion which was inevitable under the best treatment.

any means, either right or wrong, put themselves upon the works of the art ; but they principally boast themselves amongst the ignorant, common sort, of setting bones which are out of joint and broken ; affirming, as falsely as impudently, that they have a knowledge of those things from their ancestors, as by a certain hereditary right, which is a most ridiculous fiction ; for, our mind, when we are born, is as a smooth table, upon which nothing is painted. . . . God hath endued all brute beasts with an inbred knowledge of certain things, necessary to preserve their life, more than man. . . . For it is no more likely that any man should have skill in surgery because his father was a chirurgeon, than that one that never endured sweat, dust, nor sun in the field, should know how to ride and govern a great horse, and know how to carry away the credit in tilting, only because he was got by a gentleman, and one famous in the art of war."

Here is the hydro-practice of Petro, who flourished a short time after Hippocrates, "who," says Celsus, "as soon as he was called to a person in a fever, when the fever began to be a little abated, gave cold water to drink ; and if it once raised a sweat, he pronounced the patient to be out of danger ; if it had not procured that discharge, he gave still more cold water, and then obliged him to vomit. If it did not give way to these methods, he boiled water with salt, and obliged him to drink it, that, by vomiting, he might cleanse his belly. And these particulars (I use the words of Celsus) made up his whole practice ; which was not less acceptable to those whom the successors of Hippocrates had not recovered, than it is to those in this age, who have been long unsuccessfully treated by the followers of Herophilus or Erasistratus. Nor is this kind of medicine not to be esteemed rash ; because, if it has been pursued from the beginning, it kills more than it cures." What comment upon modern quackery is more dispassionate and to the point, than this of 1700 years ago !

Read the medicine of any people or of any time, and you find allusions to the contemporaneous growth of quackery, perhaps elaborate efforts to repress it. The "Art of Chirurgery," published in 1663, contains nine folio pages of elaborate argument, to prove, of those wounds that are said to be cured by the "weapon salve," . . . "that they are cured by the help and assistance of Nature alone," and written "in regard that there are many who have asserted the contrary." "Crollius terms all ignorant and simple, that doubt of the efficacy of this medicament." Nine pages of logical argument, is an opposition abundantly sufficient to reanimate any falling cause, and, doubtless, for a time invigorated this.

Medical quackery belongs to no age, to no country, and to no people ; its elements lie in the human mind. It is as certain to take root and vegetate in any country or in any age where mind exists, as cancer is to affect the material tissues. Quackery is but an unsound modification of every science and of every art. It is a false pretence of ability, or knowledge. The science of medical therapeutics is especially open to it, both from its uncertainty, and from the difficulty of testing it. You can test a piece of iron, or a plan of ventilation ; but give a remedy, and how shall you know, from a single case, whether nature or your physic cured the patient ? You can only infer upon various probability. "Medicine,"

says Celsus, "is a conjectural art, and the nature of conjecture is such, that though it answers for the most part, yet sometimes it fails." "God and nature," says Ambrose Paré, "do sometimes such things which seem to physicians and surgeons impossible." "This observation and some others," says J. L. Petit, speaking of hernia, "prove that cures which appear miraculous, are due to nature more than art." If nature is conceded to have so large a share in therapeutics, you can decide the effect of a single remedy only by a deliberate inference upon a series of cases. But how difficult is this act of the judgment! To many men, one personal experiment is worth octavos of recorded evidence. "I grant every thing," says one of these, "but I know that this cured me, and I think it will again." "And, indeed," adds a bystander, "if it agrees with his constitution, why should it not?" Personal knowledge of single cases, lies near the foundation of all quackery. Again, the physician frankly avows the inadequacy of his art. The charlatan promises a cure, endorsed by the statement that he has had a precisely similar case. "When it was decided that the Lord Martignes must die, Monsieur de Savoy showed himself to be much discontented and wept; and asked them again, 'if for certain they all held him deplored and remediless;' they answered, 'yes.' Then a certain Spanish impostor shewed himself, who promised on his life, that he would cure him; and if he failed to cure him, they should cut him in one hundred pieces. 'I swear to thee, by God, that before eight days, I will make thee mount on horseback, with thy lance in thy hand; provided that no one touch thee but myself. Of this thou mayest be assured upon my promise. I have cured divers who had greater wounds than thine;' and the lord replied, 'God give you grace to do it.' Notwithstanding, two days after, the said lord of Martignes died; and my Spaniard, seeing him in the agony, eclipsed himself and got away without bidding farewell to anybody." This is the second category of quackery, common to all ages and countries; except that, in these days, the cancer doctors and the water doctors find it unnecessary to "eclipse themselves and get away," inasmuch as the notoriety of a case which has proved fatal, is pretty sure to bring another.

Other bias of deliberate judgment may be found in a love of change, of patronizing, of originating, and especially when a quiet and inoffensive person, suddenly, and perhaps to his surprise, finds himself arrayed in the defence of some form of quackery, which consistency then makes his own cause. And, finally, the mind is often irresistibly swayed by the personal attraction and power of some representative of unsound doctrine.

Such are the disturbing elements of judgment where this faculty exists. But, unfortunately, medicine is a balance of probabilities. Fully to appreciate the leaning of medical evidence, demands capacity, simultaneously to embrace a considerable number of details, often distributed through time, and also a fair share of intellectual capital to discriminate and to combine them. Now a mind well endowed by nature, and susceptible of stimulus upon subjects connected with the daily occupations of life for which it may have a natural aptitude, may have no taste for this especial subject, or knowledge of it, and so yields at once; or may be biased by any of the considerations before exposed.

On the other hand, many minds cannot comprehend a logical necessity, and propound their belief quite as impressively as if they could. Expose to a person of this class a preponderating mass of probability, or an inevitable certainty, depending from a chain of evidence, and at the expiration of an hour you shall receive the answer, "Still the quack cured this man." "But," you reply, "Nature, and not the remedy, cured him;" to demonstrate which, you open another argument, and are again brought up by the original premises of your inflexible friend, that "the man was cured."

Such has been and will be the permanent nutriment of quacks; not of any one sect, but of all sects; not of any one year, but in all the past, and in all the future. If these views be correct, quackery cannot be repressed by any exposition of the absurdity of a theory or set of theories. It is not its local or temporary manifestation that demands our notice. Its roots lie deeper—in the defects of the human mind. Credulity and imperfect knowledge are the fermenting soil which nourishes a hundred different excrescences, modified by the local influences of disease or of national peculiarity. You cannot abate quackery by any thing short of government restriction. Every man must have his medical, political and religious faith; and unsound and unenlightened minds, in a free country, will have, equally, theirs. You cannot repress quackery. Let us not vitalize it by opposition. It lives by notoriety. Like cancer it is inflamed and grows by injudicious efforts to repress it. Leave it alone. I will not honor contemporaneous quackery by naming it in this place; you cannot recall a patient strayed from your fold by exhibiting your displeasure. Maintain your philosophy. Perhaps you may ingraft into your science a hint from the total abstinent in therapeutics, which will be of service to the intemperate in practice or in drugs. Your patient may return, but it is even then quite likely you will live to be many times deserted in behalf of quackery by the same profound logician.

The progress of true medical science cannot be impeded by the vulgar opinion of the unsound or uninformed. It is in this century steadily and rapidly progressive. Entwined with the kindred sciences of physiology and chemistry, it grows as they grow, at intervals sending forth an independent shoot. It is curious to observe the difference in the methods of its culture, at different times and in different countries; and to note how a few standard types of medical research have been repeated. Celsus divides the medical world into two classes. "There are those," says the Roman writer, "who declare for theory in medicine, and who look upon the following things as necessary: a knowledge of the occult and constituent causes of distemper; next, of the evident ones; then, of the natural actions; and lastly, of the internal parts." Among occult causes were classed purely theoretical causes, of the four elements, humors, &c. On the other hand, those who styled themselves empirics, admitted the "evident causes" as necessary, but "affirmed the enquiry after the occult causes and natural actions to be fruitless, because nature is incomprehensible." They held that "it is much better to seek relief from things certain and tried;" that "medicine was deduced from experiments;" that, for example, "some used a full diet in the beginning of a disease, others were abstemious; and that those grew worse who had eaten plentifully."

"That these and the like instances daily occurring, diligent men observed attentively what method answered best, and afterwards began to prescribe the same to the sick." Here is the medical theorist, and here the experimentalist of all time. On the one hand, the humorist, the solidist, the Brunonian, and I know not what other disciple of false theory, ever volunteering and assuming the unproved *why*; and on the other side, the Hunter and the Louis, dealing with nature as it exists, cautious in assigning cause, inexorable in requiring evidence.

It is a little remarkable that national peculiarity should be so marked in its bearing towards medical science. "The Englishman, while still young," says Roux, after his visit to London, "is remarkable for a certain maturity of reason and of judgment, which, when we are about to teach him any science whatever, allows us to reckon as much upon the operations of his own thoughts, as upon the simple exercise of his memory. Without being less qualified for labors of the mind, for the cultivation of the sciences, and conceptions of genius, the French youth is more impetuous, more distracted; his reason is more slow in coming to maturity; and when he sets about the study of the sciences, it is necessary, for some time at least, that his memory only should be cultivated, and that few things be left to his meditations."

French medical science strikes a foreigner as a forced growth, a business overdone. There is less claim to originality in science, than constant struggle to assert it. In this dense competition, notoriety is the great aim. Numerous scientific societies offer a market to novelty. Here is a mutual forbearance which listens patiently, on condition of being heard. A society or a train of followers thus becomes a rostrum for announcing the last remedy or surgical operation. It was complained that a gunmaker availed himself of the Academy of Sciences to give his wares publicity.

This long custom and facility of disproportionate announcement, are a constant stimulus to the medical world, who labor with an assiduity little known in this country. But the mass of labor is not always directed by sagacious hypothesis. Medical discoveries are generally but novelties, slight modifications in routine and method, and seem to be an inadequate remuneration for the great expended labor. On the other hand, this constant review of details produces a medical precision elsewhere equally unknown. In knowledge of the usual combination of symptoms, in diagnosis, in pathology, the French are unrivalled.

The German mind is of a different stamp. Here is the same, perhaps greater capacity for labor, guided by the most ingenious and recondite theories. From Germany, we have Embryology, and the Philosophical anatomy, originating, as if to stamp a current value upon the imaginative faculty, with the great German poet.

John Farey, a practical engineer, and familiar with the history of mechanical inventions, in his testimony before a committee in the House of Commons, in 1829, expressed the opinion that "the prevailing talent of the English and Scotch people, is, to apply new ideas to use, and to bring such applications to perfection; but they do not imagine so much as foreigners." This is perhaps as true of science as of art. The general

tendency of modern English medicine is not to new or subtle theory, neither have the majority of English medical writers any taste for dry and exact detail. Theirs is not the philosophy which excavates perpendicularly downward at the root of some isolated fact, to scrutinize in the ultimate fibril its microscopic point of contact with the hidden rills of science; nor yet that which toils on the surface, to note with unwearying fidelity the germination of disease, and to chronicle in every leaf the varying type of morbid action. But there is a high intelligence and a large share of sound determination in the better part of English medical mind. It is slow of admitting novelty, a little tenacious of opinion, perhaps of prejudice, and ever leaning to the useful, to practice rather than theory, it is perhaps a little exclusive in its attention to therapeutics. But we are dealing with the practitioner as well as the pathologist, the man as well as the philosopher; and we recognize the cultivation of the higher intellectual faculties, and the balance of a strong common sense.

Louis and Hunter! the pathologist and the philosopher! The one stimulated by a passion for truth, the other impelled by genius. The labor of the one a corner stone in the foundation, which art cannot improve, and for which no other can be substituted, which may be built over as the edifice is reared, but which will resist the wear of time. That of the other, a vast and fragmentary system, sketched by the hand of a master, with here and there a thought, as of inspiration, which suggests the architecture of the whole plan.

Louis, singling out each function of the healthy man and tracking it through the labyrinth of disease, observing such experiments as nature herself might institute. Hunter dismounting the machinery of the whole animal world, ever suspecting new truth, forming new theory, and with a rapid sagacity organizing original experiment. "For, as in ordinary life," says Lord Bacon, "every person's disposition, and the concealed feelings of his mind and passions are most drawn out when they are disturbed, so the secrets of nature betray themselves more readily when tormented by art, than when left to their own course."

Louis gauging phenomena by standards of color and form and dimension; Hunter seeking behind these phenomena to link them by some principle common to animal existence. Louis identifying occurrence, the when and the whether; and affirming truth upon this side of the verge of uncontrovertible certainty. Hunter seeking cause; ever contemplating the why; transcending proof to speculate in possibilities; summoning a thousand facts from the recesses of a vast mind, to cluster them about some shadowy uncertainty, until it is revealed as palpable as if demonstrated.

In a storm of prejudice and error, Louis stood passionless and inflexible, deep in the conviction, that amidst the flashing and meteoric sophistries of Broussais, the modest lamp of truth would arrest attention by its intrinsic beauty. His was an intellect not readily conjecturing, but sound in its discrimination between well known and recognized resemblances, and indefatigable in action. The intellect of Hunter was a gigantic mechanism in full play; capacious of a myriad of circumstances, cognizant of the loftiest and of the humblest details of the organized world.

Rapidly transported to the confines of human knowledge, and there pausing, Hunter sat, as in that noble effigy which art has bequeathed to us, for hours consecutively contemplating the memory of facts beneath an ample forehead. It was then that faculties, at other times chained to the slow progress of experiment, or diverted to the exigencies of daily life, assumed their legitimate sphere, and strove with a noiseless and impetuous energy. Gazing into the misty future, suspecting affinity from resemblances as extravagant as beautiful, devising and executing almost simultaneously the *experimentum crucis*; ever laboring; soaring from experiment to abstraction, and nailing abstraction again down to the test of experiment; toiling at his art for the means of gratifying his enthusiasm for his science; such was John Hunter; and, if his books are hard to read, I question if the hardness be not the hardness of his facts, and their obscurity the depth of his reasoning.

From mind turn to matter, and regard the possibilities of human knowledge in our science. Who will assign a limit to man's future knowledge of chemical affinities? Reason indicates no barrier beyond which the analysis of inert matter may not be urged. The chemical eclecticism of the atoms of the animal tissue will ultimately be traced to the point where chemistry yields its sway and vitality begins. The cell, the point at which matter, stimulated by the vital force, first becomes sensible to the eye, is now being recorded in all its manifestations, as it yields to the mysterious influence which transforms it into the animal and vegetable world. Cancer and tubercle, lesions of the cell, common to the whole animal kingdom, and terribly devastating to the human race, are upon the eve of being as far identified, as a thorough appreciation of their ultimate form and a fair inference upon the forces which animate them will warrant. Muscular force, which has now been shown to animate the simple cell as well as the ultimate element of the true muscular fibril, is as yet unexplored. Its key fact, the entering wedge, the starting point from which investigation shall proceed, is not yet recognized; and unless it lie in that acknowledged fragment of what is called animal magnetism, which is said to modify or annul muscular power, it is a labyrinth without discovered entrance. Yet there is nothing in the relation which this force bears to animal existence which ostensibly prohibits its ultimate exposure. The nervous fibril of each muscle will one day be followed to its termination in the cerebral mass; and while the physiologist appropriates fibre after fibre for his sensitive and motor functions, the intellectual philosopher will analyze the mental faculties, claiming for their few dissected elements whatever tract may then remain unappropriated. The solid and the fluid, the denser and the rarer air, chemical force, light, the muscular and vital force, the intellect, the individual, successively escape one after another of our senses, until certainty becomes hypothesis, and conjecture in its turn fades into utter ignorance. Yet they all exist. The term material has relation only to the reach of human faculties. The interlacing evidence of all the senses attests the being of a resisting mass; hypothesis allures us to embody the less palpable testimony of a single sense, while that which is conceded to be immaterial lies where human imagination cannot follow.

There is a point at which religious faith makes it a duty to avow this ignorance ; in conceding to infinite power the ability to act without material, and without place and time. To fix this point is simply to assign a limit to the reach of human understanding ; and in the impossibility of doing this, it is neither a confession of a gross faith, nor a derogation to the attributes of matter and of mind, to run the boundaries of immaterialism close to consciousness itself ; to class with the material, not only the attributes of matter, but that machinery of sense and of the intellect which is subservient to the will ; and in this way to extend the possibility of human comprehension, so that it may one day unravel much that is now invisible and intangible ; exposing the subtle relations of matter and of electricity, of muscle and of force, of special sense and of intellect. Analogy would then suggest in these untrodden regions continuous stages in a system of transition from palpable to less material ; the development of a lofty structure, at whose foundation man now climbs.

It has been well said that, "if we are to have a correct philosophy of the human mind, it must come from physicians." As the surgeon deals with pathological processes in immediate contact with his senses, so the physiologist is nearest the mechanism of thought. Rays of light approach the earth, bearing the image of a distant star. They are woven and interwoven by human art, they penetrate the eye of the astronomer, to be elaborated in the mind, and sweep on with the diverging rays of human knowledge to illuminate the intellectual world. The physiologist claims the narrow isthmus which unites the luminous and mental ray, and lays his finger upon the machinery which effects the first step in the system of transition.

Analyze reason itself. The working of this complex faculty divested of its adventitious circumstance and sifted to its simplest form, the syllogism, is but a recognition of equality or inequality, of identity in degree. Represent equality or inequality by units. Suppose the mind to deal with units of resemblance or of difference, and we have already invaded the science of number ; an intellectual operation, which can be performed by a material mechanism with far more accuracy than by the intellect itself ; and in which a unit of brass is more certain to register its due influence upon the dial, than is an abstract unit upon the tablet of memory.

A brief but grateful task remains. The office which I humbly hold, has been occupied by those whose well earned name has conferred upon it dignity and even lustre.

He, to whose hereditary claim upon our respect, and to whose culminating and completed reputation we now yield a ready deference, but yesterday was toiling with an iron energy and unremitting will, bending to our science the best faculties of a long and vigorous life. Go to yonder amphitheatre, where the sufferer seeks in silent agony the last resources of our art ; and in its wide facilities, its noiseless discipline, the absence of all ostentation, and in the calm severity which recalls the classic day of surgery, in a perfection indelibly stamped upon the organization of this arena of our science, study the impress of his ruling intellect.

Yours, Gentlemen, is also the grateful recollection of one, the echoes of

whose voice have hardly ceased within these halls. The spontaneous language of regret that he should have withdrawn in the meridian of his abilities from a position which no one was better qualified than he to fill, is yet upon the lips of all who have at heart the interest of this institution. For many years identified with its history, the warm advocate of whatever was advantageous to the college, deeply interested in your well being and receiving in return a ready and loyal devotion, the loss he has entailed upon you in resigning the professorship of surgery cannot well be overestimated. To you, Gentlemen, I leave the expression of your appreciation of his teachings, and your interest in his welfare.

With unfeigned distrust in my ability, with a deep sense of responsibility, with an earnest hope of making this office in some measure useful to others, I enter upon its duties.

2 2

NOTES

FROM

CLINICAL LECTURES ON SURGERY,

DELIVERED AT THE

Massachusetts Medical College,

DURING THE

SESSION OF 1850-51.

BY HENRY J. BIGELOW, M.D.

Professor of Surgery in the College, and one of the Surgeons of the Mass. Gen. Hospital.

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NOTES FROM CLINICAL LECTURES ON SURGERY.

MONDAY, Nov. 11, 1850.—The present hour is allotted to the purposes of clinical instruction ; to the consideration of cases of surgical disease in the details of their history, immediate antecedents, symptoms and treatment. This is a mode of study which has been before alluded to, and is opposed to the abstract and general account of disease adopted by the general treatise. It is, indeed, the natural method of study ; the order in which experience presents itself to the surgeon, and in which it should be made to present itself to every student of this science. There is no substitute for it. Yet we find that when two similar cases have offered themselves to previous observers, it has happened that something common to both has been drawn from them, and that a generalization has been thus made ; and it would be obvious folly not to avail ourselves of the knowledge and teachings of those who have thus previously observed. Clinical study, therefore, proposes to itself not only the examination of a detailed and isolated case, but also contemplates its relations with other similar cases. It investigates the eccentric biography of some particular instance of disease, with constant reference to the usual and common history of the same disease, gauging by this standard the irregularities, and endeavoring to reconcile to this standard the anomalies, of each recurring case. Our clinical study will be confined to the cases we have observed together during the visits at the Mass. Gen. Hospital ; an institution which has no superior, and which offers great facilities for the observation of surgical disease. It will be found, at the end of our term, that a very large proportion of the usual surgical affections will have passed under our notice, and in the common relative frequency of their occurrence in the routine of daily practice. And let not the graver and striking cases claim too large a share of your attention ; these are not the cases which you will meet with in your daily professional walks. But it is the minor and seemingly slight and trivial ; the chronic,

unchanging and unattractive lesions, which will fill the sphere of your daily avocations, and upon the management of which will depend your comfort and success. In addition to the surgical cases occurring at the Hospital, it will be my duty to notice the surgical operations there performed before the class; and this naturally leads to the consideration of the anæsthetics so constantly at those times administered.

It is a little striking that those who are in the daily habit of administering anæsthetics for the slight operations of dentistry, or in midwifery, are often startled at the violent or seemingly dangerous symptoms which sometimes result from the administration of the dose required for protracted operations; but I believe that any one who shall have witnessed these effects during a brief period at the Hospital, and who shall have learned their true relation to the anæsthetic state, especially in point of danger, will feel himself at home in administering the ether in any emergency whatever. I use common ether (sulphuric). Chloroform has killed people. There is sufficient evidence that patients in good health, to whom chloroform was administered in the ordinary way and with ordinary care, have become pulseless, dead, suddenly and without warning. Such accident has either never happened with ether, or is excessively rare. Chloric ether, dilute chloroform, blisters the skin, which requires abundant oil to protect it. So that, on the whole, common ether is safest, cleanest, simplest, and is, indeed, apart from its odor, a perfect anæsthetic.

CASE I. *Extrophy of the Bladder, &c.*—This remarkable case, although not from the Hospital, is accustomed to offer himself for examination here, and elsewhere. I have seen but one other similar case, The first feature which strikes us is the red, raw and inflamed mucous surface of the posterior wall of the bladder, which is protruded through an orifice in its anterior wall as large as a moderate-sized apple, and thence through the abdominal parietes. It is thus literally turned inside out; and exhibits the ureters dripping with urine, and below, two orifices, which the patient states to be, and which I dare say are, the termination of the spermatic ducts. To complete this median division of the tissues, there is entire epispadias of the penis and of the gland; and the bones of the symphysis pubis gape to the extent of many inches. You will observe, besides, an inguinal hernia, produced, very likely, by a laxity of tendinous fibres which have no firm insertion.

This is an instance of the failure on the part of nature to unite the lateral masses of the body upon the median line, and bears analogy to

certain other deformities, such as hypospadias, hare-lip and spina bifida. It is incurable.

CASE II. *Epithelial Disease of Lip.*—Commonly called cancer of the lip, and with good reason; for although the affection is by no means identical with cancer, yet it has practically many of its destructive properties. It affects the skin and subjacent cellular tissue, the mucous membrane, and the muscle. The man operated upon on Saturday, was about 52 years of age, healthy, and of a fleshy make. Two years ago he discovered a pimple of the size of a small pea on one side of the free edge of the under lip. A year ago this had attained a double size, and was covered on the buccal margin with a scab of ordinary appearance and of the size of a half dime. This patient had been treated, as such lesions often are, by some cancer doctor with caustic; but ineffectually. I removed the mass by a V shaped incision in the sound tissue, and the edges were approximated by three or four sutures. The great object here is completely to excise the disease: and if this is done, it has little tendency to return; differing in this respect from true cancer. Now the latter disease may affect the lip as well as other regions, and hence the importance of establishing distinctly the difference between the two diseases, that you may be able with confidence to assure your patient of his probable future. And first let us eliminate the advanced stages of this disease, where the bone is eroded and the glands affected. In such cases extensive plastic operations are sometimes necessary. I have removed the entire lower lip, dissecting the cheeks back to the facial artery of each side, and uniting them when drawn forward upon the median line. In this case the disease returned in the cicatrix a year after. In such cases the vast ulceration and fungoid growth may alter the general appearance of the texture to a degree which may render its appearance, without the microscope, equivocal. But in its early stage the epithelial disease of the lip generally shows upon section, as in this case, a dense white opaque color, and often upon minute examination, as here, vertical striæ dividing it into apparent columns, which either terminate at the free labial edge, disintegrating into a paste which furnishes a scab, or may rise above it, to a considerable height. But the microscope leaves no doubt, in the majority of cases. I will not say all cases; for though some observers have no question upon this point, I have not satisfied myself about it. In most cases the field, as in the present instance, shows unequivocal epithelial features. The white caseous mass shows the normal epithelial cells and scales; every irregularity of the

latter varying in size and shape; while the distorted cells often attain, with and without nuclei, enormous size. A careful observation also detects little groups of the minute cells in the first period of their growth.

Such is the common disease "cancer of the lip," beginning with a small purple crust or scab, and if not removed in season, attaining an ulcerated growth, which compromises the life of the individual; perfectly curable at first, but if neglected or tampered with, getting beyond the reach of surgical art.

CASE III. *Hare Lip*.—This patient of my friend Dr. Hayward was a boy of 8 or 9 years of age, presenting the ordinary appearances of a bad single hare-lip. The fissure reached the left nostril, dividing also the hard and soft palate in the mouth. You observed that the division of the lip was a little to one side of the median line. It is always so, with very rare if any exceptions. The front teeth also often project, as here, where one had been recently removed. The edges were refreshed and brought together by sutures. We rarely use pins, though they were once thought essential. Sutures answer equally well, and are more convenient. The upper one, as in this case, should be carried well up into the nostril to prevent a gaping and ugly orifice there. It may be added, in respect of these sutures, however unscientific the avowal may be considered, that with a healthy patient and good atmosphere, sewing skin is much more like sewing cloth than is generally supposed. It is better to add stitches enough to adjust the parts exactly where nicety is required, than to omit them and trust to nature to do it. In the latter case the gaping interstices gets filled with lymph, leaving a broad cicatrix, or an edge projects: so that altogether we are less sure of the result than when the edges are everywhere nicely adapted and brought together as has been described. I never saw an operation for hare-lip which did not leave a slight notch or fold at the edge of the lip. In fact, the longitudinal contraction of the cicatrix would produce this, but you may avoid it almost entirely by paring the free edge well down to the mouth; let the cut surfaces be concave rather than convex towards each other; and dissect up the flaps from the jaw enough, especially in infants, to abate the lateral traction. Finally, remove the stitches with the first trace of suppuration in their track, or you will have scars to mark their position. This operation of Dr. Hayward will probably make an excellent lip. In regard to the cleft palate of this boy, where it is so wide, it is unfavorable for operation. I have produced, contrary to my expectation, a good union of the posterior portion, in a similar case, but the palate was after-

wards hard and tense from the contraction which ensued upon the large lateral dissection necessary to disengage the scanty flaps. The cicatrix was very different from the pliant and serviceable palate which we often have after operation, where the cleft is not so wide.

CASE IV. Removal of Cicatrix of Neck after Burn.—Some of you have before seen this enormous cicatrix of the neck and breast. The patient was burned by the ignition of matches in his vest pocket. Last year I divided a bridle of the neck, and with real relief to the man. Why it did not again contract, it is difficult to say; but the fact is, that he could raise his chin considerably better, for the operation. The whole matter of the contraction of cicatrices is uncertain. Some diminish almost to obliteration. Others remain loose and pliable without contraction. Lymph has doubtless much to do with it; but we generally cannot assign the direction of contraction. Some parts of this scar were exquisitely and finely plicated; while other parts present large welts, much like cheloides. One of these, about the size of a finger, and the seat of troublesome suppuration, I removed before you on Saturday, from the lateral hyoidal region. Such masses of lymph are usually of feeble vitality, but this was nourished by eight or ten small vessels, requiring ligature. The wound has gaped widely, and the motion of the head is free. Without over-estimating the chances of relief, we may aver that, as the wound cannot contract to smaller dimensions than before, and as the fibrous and contracting lymph is entirely removed at this point, we have every hope for the kind of improvement which before resulted.

CASE V. Tertiary Syphilis. Ulcer behind the Left Leg on the Calf.—This patient, a middle-aged, healthy man, had chancres fifteen years ago, and again Sept. 1849, for which he treated himself, but subsequently took pills for a long time from a physician. Two months after the primary sores, he had rheumatism of the right wrist and knuckles. Soon after, scabs upon the hairy scalp, accompanied with commencing and discrete eruption of pimples elsewhere on the body. Some of these pimples became large, and covered with a scab, while the left leg was subsequently the seat of a considerable ulceration, which had attained the size of the palm of the hand, and was preceded by a subcutaneous tubercle. I will only remark of this case, that its progress is somewhat anomalous. The deeper forms of cutaneous eruption, the tuberculo-crustaceous eruption of transition from secondary to tertiary disease, and especially the tertiary ulcer of the skin, resulting from the "*tumeur*

gommeux," belong to a later period of the affection than that at which they have been manifested in this case. It is hardly worth while to go back 15 years for the primary affection, though a period even as long as 20 years has been assigned as a limit of tertiary disease. There is reason to believe that the patient has undergone mercurial treatment, which may account for the absence of some of the usual forms of secondary affection. The view which has been adopted in relation to this case is confirmed by the rapid cicatrization of the ulcer under the specific treatment of tertiary disease, viz., the iodide of potassium in considerable doses, here increased slowly from five to ten and fifteen grains, three times a day, and for a length of time. The patient will be soon well.

NOVEMBER 16th, 1850. CASE I. *Traumatic Ectropion*.—A middle-aged man, in good health, stated that, 9 years before, he first perceived a small pimple upon the lower lid of the eye, which gradually enlarged until it had attained the size of a large pea. A few months ago, it was treated with caustic by a quack, when the entire eye became inflamed to a degree resulting in its disorganization and in its adhesion to the remaining fragment of the lower lid. The lid is everted, and in this position suspended, tense, between the eyeball and cheek; the patient wearing a poultice over the whole, for the relief it affords him. In this case the ocular globe was incised for the purpose of allowing the escape of its useless contents, and in the hope of inducing by its atrophy a contraction and diminution of the exposed conjunctival surface. This was done by Dr. Hayward, whose patient he was.

CASE II. *Inguinal Hernia. Treatment by Injection*.—This subject seems to possess some little general interest. The disease is common, and the surgeon is often applied to, to know how far it may be cured by injection. This method of treatment is not new. In his work on Operative Surgery, published in 1846, Dr. Pancoast states that he had employed it eleven years before that date. The operation consisted of an injection into the sac of a stimulating fluid, by means of a minute trocar and canula, to which a syringe was afterwards adapted. This writer mentions Lugol's solution of iodine, or the tincture of cantharides, in quantity from half a drachm to a drachm, as the injection used. Neither is there anything new in attempts to obliterate the ring by adhesion or

destruction of the sac. Such were, in the latter part of the last century, the ligature or excision of the sac and testis, by which "the bishop of St. Papoul found that more than five hundred children had been castrated in his diocese"; and the *royal stitch*, which embracing the sac, preserved the testis to fulfil its legitimate function of making subjects for the king; and later, the operations which plugged the ring with a piece of the scrotum, and that which irritated it with gelatine threads, or acupuncture, and others, which have been for the most part abandoned.

The present patient, a young man of 21, healthy and of good habits, has had a left inguinal hernia for three years. Within the last year he has worn a truss, the hernia being often troublesome and tender notwithstanding. It is now, when allowed to descend, an enterocele of the size of a goose egg, easily reducible, the ring readily admitting the middle finger; and under these circumstances the patient applied for a radical operation. I stated to him that the operation was not dangerous; that it probably would not cure him, though it might alleviate the inconvenience; the last perhaps greatly, perhaps not at all. The instrument used, and which was made for me several years ago, consists of a minute silver syringe terminating in a fine tube. The latter carries at its point a perforated trocar, which serves at once to make the puncture and to deliver the injection. With this instrument, twenty-five drops of tincture of iodine were deposited at the ring itself, through a puncture in the skin made with a tenotomy knife. I will not undertake to say that I injected the sac. When the sac is thin, I do not believe it possible to say whether the instrument enters the sac, or whether it pushes the sac before it. You may perhaps transfix it literally; but there must be, in general, an uncertainty whether the injection actually penetrates the sac, or only bathes its exterior; and practically the difference, in producing inflammation, whether from contact or from continuity of tissue, must be of no great importance. The result of the operation may be considered as a question of theory and of fact. This process aims to obliterate or plug the ring by an effusion of adhesive lymph. Now the cause of hernia is a want of resistance in the tendon; and as we cannot make new tendon, the question is, how far lymph is capable of supplying its place. Lymph is a plastic material; liable to great absorption, and having a tendency to yield to pressure. It has very little of the resisting property of tendon. Most patients are obliged to wear a truss after the operation for strangulated hernia, which creates a considerable effusion of lymph. The tendency of most

irreducible herniæ, where the ring is plugged by its adhering contents, is to increase. But theory should never stand in the way of fact. If it were possible to get at a series of statistics of this operation, the result would be conclusive. But in the absence of these, I will give the grounds for my own conclusions in respect to it.

1. I have operated in a number of cases, sometimes with relief, sometimes with none. In one case of a young child, the pressure of a light truss after the injection of ten drops tr. iodine, produced a small slough of the integuments.

2. I have been not unfrequently applied to, in common with other surgeons, by patients who had undergone the operation once, or even twice, to know what benefit would be likely to result from an additional operation.

3. A maker of trusses informs me that he frequently receives applications for trusses from patients unsuccessfully operated on ; or where the relief was only temporary. On the other hand, it is quite probable that lymph diminishes the size of the tendinous aperture in certain cases, and sometimes to a considerable degree. In fact, I know patients thus operated upon several years ago, who believe that the liability to a descent of the hernial contents has been materially diminished in their cases, and who consider their condition improved by the operation, though they still wear a truss.

Now under these circumstances, if there is no great danger attending the operation, it is justifiable ; and I never heard of a fatal result from it ; though peritoneal inflammation is occasionally quite considerable. So that a patient who desires to encounter this operation, not dangerous in itself, for a chance of obtaining greater or less relief from an inconvenience, may be gratified.

CASE III. *Congenital Hypertrophy of the Middle Finger. Amputation.*—This extraordinary deformity occurred in a fine healthy young girl of 16. The finger is truly enormous, measuring $5\frac{1}{2}$ inches in length and the same in circumference at its base. I removed the finger, and with it about three quarters of an inch of the head and shaft of the metacarpal bone. (The details and result of this case will be published at another time.)

CASE IV. *Pott's Disease of the Spine. Death.*—The boy whom we saw on Saturday, moribund, died in the course of the day. He has been for some weeks getting steadily worse, and within a few days quite

helpless, sleeping most of the time except when roused. I have at all times refrained from minutely examining his back, as he was beyond the reach of art, and the great object was to make him comfortable. He entered the House on the 10th day of October last; and his back at that time presented an angular curvature of about 115° , the prominent vertebræ being the 3d and 4th lumbar. This deformity showed itself, as the patient states, six years ago, but he has had no especial pain or disability till within a few weeks. Seven weeks ago a swelling upon the left side of the rectum broke, discharging pus. Another abscess was also detected at the patient's entrance, above the projecting vertebræ and to the right side, which opened spontaneously and with profuse discharge a week before death. There was also marked tenderness over the 6th and 8th dorsal vertebræ. It is a striking feature in this case, that so long a period should have elapsed between the original appearance of the deformity and the subsequent grave symptoms. This is unusual, but sometimes happens. To account for the recent and large secretion of pus, we may suppose either that the inflammatory action of disease, which had been for six years nearly stationary, was suddenly renewed, or that it had invaded the bodies of other vertebræ. The last hypothesis receives some confirmation from the position of the pus in the lumbar region, which was a little above the original lesion, instead of gravitating as usual to a depending point below it; and also from the tenderness of the middle dorsal vertebræ. These, however, as yet presented no deformity; and both foci of the disease, if there were two, doubtless contributed to the supply of pus which was delivered at the fistulous openings; in the one case at the seat of the disease, in the other upon the lower part of the nates, having probably escaped from the cavity of the pelvis by the sciatic notch.

Remarks were also made upon the following cases, which had been discharged from the House.

CASE V. *Varix*.—This patient had been successfully treated by caustic, and had also been subjected to various applications for the eczematous or chronic inflammatory affection of the skin of the leg, which often accompanies varix.

CASE VI. *Extensive Cicatrices of Legs after Burn from Gunpowder*.

CASE VII. *Compound Fracture of Leg. Amputation four Months since. Stump healed*.

MONDAY, November 25th, 1850. *Meliceric Cyst in Forehead. Operation.*—This patient, a healthy young man, about 25 years of age, and from the wards of Dr. Hayward, presented a tumor about the size of a horse-chesnut over the left eyebrow. He stated that it had existed from birth, but that it had doubled its size within a few months. Upon examination, it proved to be moderately soft and fluctuating; and from its *feel*, might have been a bag of fluid, or a common fatty tumor. And yet you could be tolerably sure of making a correct diagnosis in this case. In the first place, a sac of any other fluid than the caseous mass which this proved to contain, is very rare in this place. For example, a cyst containing pure serum, or glairy fluid, in the cellular tissue, is quite rare. Neither is chronic abscess, another alternative, likely to exist from birth, or without some of the inflammatory symptoms which were wanting here. Fatty tumor, which is sometimes fluctuating, has generally a lobulated feel somewhere, which this had not. I examined this patient carefully at my house, before he entered the hospital. There was a uniform fluctuating mass above the brow, bounded at its inner side by a remarkably long peritical ridge. Now several years ago I removed a similar congenital tumor from a child of three years of age, situated deep beneath the temporal muscle, and found it imbedded in just this way, in a depression which it had formed for itself in the temporal bone. So that these tumors, when congenital, may imbed themselves at a very early period in the thin, soft adjacent bone—remaining, as in the present case, comparatively inactive for a number of years, and suddenly expanding in a few months, so as entirely to outgrow the original accommodations. When a cyst thus rapidly increases, its enlargement, in several I have removed, seemed to be from an increase of its serous rather than of its solid contents. In this case it was not so. The whole material had increased in quantity.

Apart, however, from any peculiar evidence, encysted tumors are very common in this region; upon the lid, in the orbit and about it; so that a tumor here which presents nothing incompatible with the hypothesis, and which suggests no other especial growth, may be fairly set down as of this character.

By “encysted tumors,” I mean a distinct bag or cyst, containing this peculiar caseous, soft, white material. Serous cysts (if we except “hydrocele of the neck”) are excessively rare. Cysts containing glairy fluid (if we except the bursa) still more so. Nor should the term “encysted” be applied to those hard or fatty tumors which happen to get surrounded by a little condensed cellular tissue, from which they “peel out.” The true

“encysted tumor” is very common, and being quite distinct from other growths, should have a monopoly of the name. It is said to contain either *atheroma* or *meliceris*—very ancient words, which often convey no distinct idea. Yet these terms are really very descriptive of the two varieties of the contents: the former signifying *pap*, the latter *honey-wax*; by which is meant, I believe, not clear honey, but chilled or frozen honey, which it greatly resembles. They are in pathology nearly identical; but *atheroma* readily mingles with water; *meliceris* is waxy, sebaceous or oily, and sheds water. *Atheroma* is a watery fluid, filled with little plates or fragments of epidermic material, sometimes as large as grains of rice, and of a semi-translucent white. Under the microscope this shows numberless epithelial scales, of which these masses are composed; sometimes nucleated, sometimes not, and often very irregular. In *meliceris*, on the other hand, though there may be serum present in small quantity, yet the cells adhere to each other by a tenacious sebaceous matter or concrete oil, and at least in four among the tumors of this sort which I have removed, and of which I have retained a careful microscopic record, there were no scales, but in their stead beautiful translucent oval cells, a few of them nucleated; and occasionally, as a few in this case did, presenting irregularities in form, and some being of minute size. Their usual diameter is rather less than that of an epithelial scale, and they are seen imbedded in and inseparable from the granular sebaceous oily mass, when the field is filled with water; but substitute oil for the water, between the glasses, and these granules are at once dissolved, the cells coming out clear and clean into the field, and being the most truly beautiful cells I have ever met with among morbid growths. They are almost hyaline, and may be rolled about like little bladders. In one case they partially collapsed upon the contact of oil, as by an instantaneous exosmose. The gross mass looks like lard at ordinary temperatures, and is sticky and greasy to the touch.

The cyst of *meliceris* and *atheroma* is sometimes lined with a beautiful epithelium. Sometimes the epithelium is irregular and rough. In two cases, at least, of *meliceris*, the epithelial lining was only partial—the rest of the surface being moist and divested of integument. This last character may perhaps have some influence in determining the quality of the secretion; whether watery, or sebaceous and waxy; whether epithelial scales, or those large and beautiful epithelial cells.

These cysts sometimes attain large size. I have one that I removed from the shoulder, which held a large tumbler full of *atheroma*. Sometimes they point and burst, subsequent inflammation then obliterating the

sac—or it remains open. But usually the whole sac requires extirpation, as in this case, where, after puncture, the sac was dissected out by Dr. Hayward. A small portion when left is sometimes obliterated, but sometimes gives rise to new secretion ; so that it is better in operating to wait for the bleeding to cease and to explore the wound for the whole sac ; especially in the lid, where the bleeding at first obscures everything. About the orbit these tumors are very liable to be adherent to the bone ; and congenital tumors thus situated, have, in several cases which I have recorded, proved meliceric and not atheromatous. Of their cause we know nothing. Astley Cooper thought that they were obstructed sebaceous follicles. Lebert states that they contain all the products of these follicles. This they certainly do, and in addition, often hair, free and attached ; but they are often deep, and seem to me to have also other analogies than those offered by the sebaceous follicle.

CASE II. *Hydrocele. Radical Operation.*

CASE III. *Hydrocele. Radical Operation.*

These two cases were average instances of the disease ; being each about the size of a small fist, elongated in their vertical diameter. As to establishing a diagnosis upon the external outline, pear-shaped or other, which these accumulations of fluid present, it is very uncertain. Their great test is translucency. A common hydrocele is translucent. These were perfectly so. When I first examined the elder of these patients, I felt a distinct series of irregularities upon the posterior surface of the sac, like indurated veins of varix or some other unfrequent accompaniment of the affection ; but transmission of light showed that there was no varix, and that the convoluted feel was only accidental and in the fibrous parietes. These things are sometimes very deceptive. I once treated a perfectly hard and knobbed string of tumors upon the cord, by leeches, there being some pain, and as I had no doubt of their solid character. There was no approach to fluctuation. As a mere experiment, when I saw the patient again I placed a lamp behind them, and they proved to be perfectly transparent ; constituting hydrocele of the cord ; the unobliterated tube which the testis drags after it to the scrotum. To examine it properly, you should grasp the scrotum behind, and drawing it tense over the tumor, look through your hand or a roll of paper or a stethoscope placed upon the shaded side, while the other is illuminated by a lamp, or, what is better, by strong sun-light. And it should be borne in mind that pus, or bloody fluid, or walls greatly thickened with lymph, are not unfrequent and are opaque.

They must be judged from other evidence. You may have noticed that in the elder of these patients the testis seemed to be a distinct mass appended to the bottom of the tumor, instead of being, as usual, imbedded behind it, and from a quarter to a third way up. This was probably from an accidental adhesion of the tunica vaginalis to the front of the testis, which prevented the sac from being distended downwards and forwards.

The history of these two cases illustrates well the varying progress of the disease. The affection of the middle-aged seaman dates from 12 years, and has never been operated upon. That of the young man of 21, is of only three years duration, and I have drawn the water from it twice before. The contents of the former are a pale thin serum, becoming only cloudy upon the addition of nitric acid. That of the latter a thicker bright yellow fluid, containing abundant albumen, the whole being stiffened as you see by the acid.

It is unnecessary to speak of the numerous methods of exciting inflammation and the exudation of lymph with a view to the obliteration of the cavity. Port wine and water, which sometimes produces sloughs of the cellular tissue, has been pretty generally abandoned for T. Iodine, which does not. I have often seen Velpeau fill the sac with water containing one third T. Iodine. It was rubbed about in the sac until painful, and then allowed to escape. Another way, and that which I adopted in these cases, is to inject a drachm of T. Iodine in two or three drachms of water, and to leave the whole in the sac for absorption. This method seems to be as effectual and safe as any other for the average cases of the affection in adults. You observed that it excited, as often happens, considerable pain in the course of the cord and in the loins, especially in the case of longer standing, where the water had never been drawn off. The testis will probably swell, perhaps largely; flocculent serum will be effused into the sac, as into the thorax in pleurisy, and when absorbed will leave corresponding adhesions of the organizable parts of the albumen; which is the object of the operation.

The patient with wound of the eye has been discharged, at his own request. The organ was no longer painful, and there is here less reason to apprehend sympathetic inflammation of the sound eye than if the inflammation had been of an idiopathic or morbid character. When such sympathetic inflammation comes on, and it is one great reason for not advising the operation for cataract upon a single eye when the other is sound, it is usually at a later period than this lesion has yet reached; usually in the neighborhood of the fifth week.

CASE IV. *Inflammation of the Gums.* “*Inflammatory Absorption.*”

—This patient, whom you have several times examined, has been discharged—a middle-aged man; in whom, without assignable cause, a toothache of the first left incisor, five weeks ago, was followed by pain in the upper jaw, which in a week presented a double ridge of swelled gum almost burying the teeth and suppurating freely. The teeth, from the right canine to the left molars, were quite loose; abscesses had formed here and there along the gums, while the face was swelled and œdematous. The treatment consisted of cathartics, free local incisions, astringent washes, and the gum was occasionally touched with muriatic acid. The affection has greatly abated, though the teeth are still far from firm.

CASE V.—In the corner of the east male ward you saw on Saturday a patient, an otherwise robust mechanic, aged 24, with a remarkable tumor in the left groin; a deep-seated mass as large as the two fists, rising considerably above the surface, its base measuring five by six inches, and surmounted with abundant convoluted veins. The leg of that side was also very large; the calf measuring four inches more in circumference than the right. The whole surface of this leg is purple, with dilated venous capillaries: and upon the external aspect, varicose veins, with several considerable ulcers of the leg, probably resulting from them. This excessive œdema, the varix and ulceration, are doubtless the result of compression of the veins at the groin, as the mass lies directly upon them, involving Poupart’s ligament. From his account, the patient first discovered a small tumor in the groin four years ago, and, at the same time, swelling in the leg, both of which have slowly increased; yet he kept at work till the appearance of the ulcers, four months since.

What is the character of this tumor? Upon its surface is a large and solid handful of varix, easily compressed, and leaving no doubt of its character. Beneath this is a mass of lumps, some adherent to each other, others moveable, and varying from the size of a kidney bean to that of an English walnut. These are doubtless enlarged glands. Exploring the inguinal ring, we find it free from hernial protrusion. The saphænous opening, as far as we can reach it through the swelled integuments, is equally free from crural hernia. This tumor lacks the thrill and the pulsation of aneurism, of which enlarged glands are no regular feature. There is neither elasticity, nor is there any lesion elsewhere to lead us to suspect chronic abscess. It is not a fatty tumor. The fibro-albuminous or sarcomatous tumor I have never known to in-

fect the neighboring glands. There is no acute inflammation. Probability then settles between two alternatives; either a disease which does tend to affect the glands, or an idiopathic affection of the glands themselves. It has occurred to me whether some diseased enlargement of the leg may have infected these glands: but I know of no such disease; nor is there here any circumscribed affection in the leg or thigh; which besides has grown much smaller for bandaging, while the ulcers have nearly healed. The groin is probably the seat of the original lesion, and the swelled leg an effect of it. Now cancer in its various forms infects the glands as a primary disease, or is secondarily absorbed into them from the neighborhood; and this is not a very uncommon place for it. I have seen three cases in the groin which I supposed cancer, in one of which it arose from the femur near its head. But in those cases there was more of a principal central lesion to which the glands seemed to be satellites. Here we have a confused mass of glands more or less distinct, as deep as we can feel them, and no principal mass till we get very deep. There is also less tendency to mutual adhesion than I should think common in glands which have absorbed cancerous cells.

Idiopathic cancer of an absorbent gland itself, in three cases I have seen in the neck, inside of the elbow and groin, was more confined to the single affected gland, which grew to the size of a goose egg and larger, while the neighboring glands were but slightly enlarged, if at all. So that this tumor wants some of the usual features of malignant disease. On the other hand, what is called "chronic inflammation of the glands," does present a very similar chain of tumors. They often occur in the neck, and on section exhibit the enlarged and red gland beautifully spotted or divided with patches of dense opaque, straw-colored lymph, infiltrated into its tissue. I have never identified these in the groin, as in the neck where they are occasionally extirpated, except as scrofulous abscess, after they have become fused and suppurated, in which state they are brought to the surgeon.

I think we may be satisfied that this tumor comes into one of these two categories; but I believe it to be impossible to decide, at present, which. We shall doubtless know more of it from its future manifestations. In the mean time, the leg has been bandaged and placed at rest in a horizontal position, with great relief and diminution in size. For the present, iodine will be administered internally, and cautiously applied without.

MONDAY, DEC. 2d, 1850. CASE I. *Fistula in Ano. Operation.*—This patient experienced, in the history of his affection, a longer interval than is common, between the first appearance and the discharge of the abscess. It appeared spontaneously by the side of the rectum two years ago, and at the expiration of two months projected an inch or more, before breaking. It is often asked whether an abscess in this region is necessarily what is called fistula in ano; or, in other words, whether an abscess may exist here without the usual tendencies of this troublesome affection. You will find in the books that a spontaneous cure in this place, as of a boil elsewhere, is excessively rare. I have seen one such case; but I incline to believe that there are surgeons of larger experience who may not happen to have seen even one. It was in a young man in whom a tender induration at the outer margin of the sphincter broke, about the third day. The probe entered three quarters of an inch, but the excessive tenderness of the part caused the operation to be deferred, and the opening healed by the fifth day after. This occurred at least two years before the use of ether, and the patient has had no trouble since. Such a case is rare, and an abscess by the side of the rectum generally requires the operation for, and practically is, “fistula.” If we adopt Brodie’s view that this abscess is always caused and perpetuated by the escape of fæces through a little ulcer of the mucous membrane lining the sphincter, we have a constant and peculiar condition connected with it; and which prevents its spontaneous cure. Brodie thinks this is the cause of their duration, rather than the friction and motion of the sphincter and levator; and, as a natural result, urges the necessity of finding this internal perforation and of making the incision through it in order to obliterate it. Against these views of this most distinguished surgeon, it may be alleged that a surgeon is generally called upon to operate without the “three or four examinations” which he finds to be sometimes necessary for the discovery of the internal orifice; and that in the event of not finding it, it is common to perforate the mucous membrane with an artificial opening, and that such cases usually get perfectly well. In this case the internal orifice was readily found at its usual place about half an inch above the external sphincter. A few days ago, in another case, I found the ulcerated orifice in a less common position, at the extreme head of the sinus and of the sphincter, and opening into the dilated gut above. The usual position of the internal fistula directing exploration, the hole being found and the incision made, it remains to be settled what is to be done with the upper part of the sinus, which, as in this case, often

runs an inch higher up. Brodie advises that it be left. This one I slit with scissors to the extent of half an inch, as it was deep, and there was no especial reason for not placing it in the category of other sinuses. In fact, it is common to divide such a sinus with caution. There is a chance of hemorrhage from vessels you cannot reach. But when the wall is thin, you may feel, with the finger in the anus, the hemorrhoidal arteries in its substance, beating, and avoid them. There were none here ; but in a case a year ago, where such a vessel was high up, directly below the upper orifice, I passed through the latter a wire of pure silver, which will twist without breaking, and let it cut its way out. Then there are not unfrequently sinuses outside, extending laterally upon the nates, sometimes to the tuberosity, or in front to the scrotum. A recent or tender one may be left to itself, the sphincter being divided ; but a chronic or indurated one had better be laid open, as in the present case ; where such a sinus having been opened by the patient himself with a penknife, had been frequently touched with caustic and had become greatly indurated. The patient, who seems to have studied the subject, desired that it should be dissected out ; but it will now doubtless granulate on exposure to the air. The operation, apart from the chance of hemorrhage, is, as you saw, inconsiderable. A finger in the anus meets, at the inner fistula, a probe passed into the sinus. Now you may follow the probe with a narrow blunt-pointed knife, and make it cut its way out, resting on the tip of your finger ; or, which is easier, and which I did in this case, drag down the tip of the probe or director through the anus, and slide it over upon the opposite side of the nates. The mass is then exposed, lying upon your instrument, and you divide it as you please. A little dry lint separates the cut surfaces for a day or two while they have a tendency to unite, and the wound afterwards requires only to be kept clean. This patient will doubtless get about in the course of a fortnight.

CASE II. *Injury of Finger. Amputation.*—A middle-aged woman, otherwise healthy, two years ago washed her finger, which was slightly pricked, in soapsuds containing bed-bug poison. The finger swelled largely ; of which the rational explanation probably lies, not in any specific action of a mineral or vegetable poison, but in an aggravation of some pre-existing tendency to morbid inflammation. The patient applied to a doctress, “good in such cases,” who opened an abscess with scissors and poured into it alcohol. After a considerable interval, the part came under proper treatment in the hands of a surgeon, and was healed

its two extreme joints, stiff. This unfortunate member was again laid open, and the bone fractured by a blow a fortnight since; and the tissue of the old cicatrix ulcerating as it easily does, the thing assumed the appearance of a whitlow. Dr. Townsend amputated it at the middle joint, making a very neat flap from the palmar surface. This operation occupies pages in books upon operative surgery, and it is a sort of test of skill in the dissecting rooms. It is quite convenient to know that the distal curved wrinkle on the back of the joint will exactly open the cavity without too much uncovering the bone; and that it is the lateral ligaments which resist most till divided; but it is not often that the regular described operations will apply to the diseased finger. Fingers are often mashed or largely swelled; and unless very near to a joint, the best rule I know, is to get a good covering for the bone, wherever there is a bit of sound and attached skin, and then to divide the bone with forceps, just below it, if you are not at a joint. The arteries play a little, but if the flap is stitched or otherwise fixed in place, and the finger compressed with a narrow bandage, they generally stop without tying.

CASE III. *Tumor in the Nose. Operation.*—This may be called a tumor of the nose, for it certainly is not anything else. It is, as far as I know, anomalous, and is a most extraordinary affair. It came like a polypus, and looked like one; but it certainly is no polypus. The woman is about 40 years of age, and has been otherwise healthy, till within a few months, since when she has lost flesh. Her attention was called to the pain in the nasal and ethmoid bones, about nine years ago, when, after a good deal of pain and some constitutional disturbance, a “gathering broke,” and there was a discharge of fetid pus from the left nostril. This occurred at intervals afterwards; but about five years ago she expelled, by blowing from this nostril, a bit of white thick soft matter. This has occurred several times since, and twice a mass of it as large as the last joint of the little finger. This sort of account is very common. There is a class of patients who are made very unhappy by what they blow from their noses, and there is sometimes disease and sometimes not. “White matter” often means only abundant opaque mucus. So that this account alone was quite unsatisfactory, except that inspection of the nose showed what appeared to be an ordinary polypus high in the left nostril. Its history went to confirm its character. It “came down,” that is, came forward and in sight, a few weeks ago. Since last April it has been gradually obstructing the air on this side, and at present the stoppage is complete; the patient vol-

unteering the statement that it was larger in damp weather. Common polypi are so, and with present evidence, this was likely to prove such. The operation, as you saw, was performed in the ordinary manner. I introduced a pair of oiled polypus forceps so as carefully to include the tumor, shut the handles tightly, and after one or two twists brought out the closed instrument, containing in its grasp what appeared to be—nothing. I mentioned, at the time, that this was a common experience; that a polypus of some size, when its contained serum has escaped, often leaves only a collapsed bit of mucous membrane, concealed between the blades of the instrument, to account for a considerable obstruction removed. The forceps here showed only a little pasty material at their extremity. They were again introduced, and with the same result; but at this time the patient blew from the nose a fragment of this paste. Repeated introduction of the forceps, alternating with the expulsive effort, at last cleared the nasal passage by the evacuation of two good teaspoonfuls of the same material. This was a dirty white paste, perfectly destitute of obvious organization, about the consistence of white lead, smooth, homogeneous, and with a faint smell of macerating bone. Under the microscope it showed only very minute granular material, a very few small cells here and there, and occasionally fragments of fine fibres; the whole field presenting the aspect of common tartar taken from the teeth, more nearly than anything I know, but without calcareous deposit, and exhibiting only fragments of the long and fine fibres discovered in tartar.

The question is then upon the nature of the affection. Is this, polypus alone, mucous, fibrous, or malignant; or is this material superadded to polypus, or connected with it? It is obviously something foreign to the usual history of the affection. We have sometimes calcareous concretion in the nares, but apart from its resemblance to non-calcareous tartar, this material has no evident affinity of that sort. The early progressive character of its history now becomes of interest, and we may infer that what was once a slight is now an aggravated lesion; and that it was once attended with exacerbations accompanied with headache and terminating in a discharge of pus. This would suggest some chronic affection of the bone, perhaps tubercular. But I know of no regular affection of the antrum or ethmoid resulting in this, and it seems improbable that a soft secretion should accumulate in such quantity in the nares without becoming disintegrated and semifluid to a degree which would facilitate its escape. With these speculations, and preferring to give a curious case in its actual, though it may be temporary aspect, I leave it for the present.

MONDAY, DEC. 16, 1850. *The Case of Hernia* treated by the injection*, into the ring, of thirty drops of the tincture of iodine, left the house, "well," in three weeks after the operation. Before the operation, the intestine came down during exertion, even with a truss; and if the truss was removed, it slipped out at once, without effort. When the patient left, he could cough in the erect posture without a truss, as you saw, without the appearance of the hernia. During the first three days there was tenderness exactly at the ring; but no peritoneal or constitutional symptoms. He constantly wore a bandage or a truss, and is now "cured," if he will but remain so. Time only can show what effect the absorption of the lymph will have. On the other hand, his condition has been undoubtedly improved, with slight risk and pain, and less than three weeks' confinement.

The patient with anomalous affection of the nose† has been discharged, considering herself greatly relieved. When the coagulum had been, in the course of a day or two, cleared from the nostril, the original "polypus" showed itself as a fold of thickened mucous membrane, dependant from the upper turbinated bone. This was easily removed, but this had not obstructed the nostril, which had been already cleared.

CASE I. *Nasal Obstruction. Operation.*—Another patient has left the house relieved of a difficulty which seems to have excited some interest. This young girl had been supposed to have a tumor in the front part of her left nostril; says she had some pain there, and that respiration was not free. I found something reaching from the vomer over towards the left lower turbinated bone, which it met. Both mucous coverings were swelled, and at their point of contact, white, as if suppurating, and exquisitely tender if touched by a probe. In the other nostril, a little way back, there was a sudden hollow in the vomer, which could be felt by a probe better than seen; and this depression corresponded to the other prominence. So that all I was able to make of this "tumor" was a deviation of the vomer, which, projecting across, against the turbinated bone, was ulcerated and tender. Nitrate of silver was applied several times, relieving the tenderness; but finding that it was not effectual, I removed the turbinated bone in part with polypus forceps, then with an oiled finger forced the vomer back to its place, and left a sponge in the nostril to keep it there. The face became swelled and painful, and the patient quite feverish, till the fourth day, when the sponge was removed.

* See Lecture, Nov. 16th.

† See Lecture, Dec. 2d.

She then soon recovered, and left the house as she said "cured;" the nostril being well opened.

CASE II. Club Foot. Operation.—The tendo-achillis was divided by Dr. Hayward. There were one or two points of interest in this case. It was in a child of six, paralyzed in the lower limbs during four years, but recovering the use of the limbs the last year. Paralysis is a common cause of slight club foot, but not of the hopeful forms of it. In other words, the paralysis itself makes the operation useless. It acts unequally on the flexors and extensors, and the gastrocnemius, aided by the natural position of the foot, gets the advantage, so that the foot cannot be flexed. If the paralysis continues, it is useless to divide the tendon; but here the patient could walk. This limb measured one inch less, from the knee down, than the other. This difference puts some bad cases of club foot beyond the reach of art. It is an arrest of development, due in part to the traction of the tendons, but more to a continuance of the original action which produced the deformity. Of course, a muscle may be greatly reduced in size from disease, and even undergo the fatty or fibrous transformation, and still recover its texture and tone after the foot is brought straight. But in the hopeless cases, the long bones are actually shorter and smaller, and no orthopedic treatment will restore their dimensions. In this case the heel will readily come down.

CASE III. Epithelial Disease of Face. Operation.—This was a large pimple upon the skin over the malar bone of an old lady. This pimple is very common on the face in old people, and it is important to know it by sight. It is the "cancer of the lip" occurring elsewhere. You saw here two pimples, side by side. One, the old lady said, she did not care for; it had been there always. It was flabby and pediculated. It was, in fact, a "pediculated tumor," so called, and harmless. But the other, though smaller, gave her great pain; it was only of a few years standing, red, elevated, and hard. At its summit was a little scab. I removed the whole with the knife, and by a long ellipse, to avoid a pucker at the extremities of the united incision. Bisected, this tumor was dense and opaque white; continuous laterally with the skin, and continuous below with the white fibre of the cellular tissue upon which it was seated. In the microscope it was distinctly epithelial, like the lip described in a previous lecture, and just as capable of ulceration. An old man applied to me, a short time ago, with a large everted, ragged, and ulcerated elevation on the cheek, under the eye, adherent to the

bone. It was past much hope of benefit from operation, but doubtless was once an epithelial pimple, which could have been easily and radically removed like this.

CASE IV. *Inverted Toe-nails. Operation.*—Many of you know this affection. The great toe-nails are buried, as in this case, at their edges, deep in fungous granulations, so tender that they cannot be touched. This begins gradually, with a tight shoe, or an irritable skin, and a nail uncut at the corner. The flesh gets tender, the corner cannot be got at, and the affection progresses or remains stationary. It rarely improves even with palliative treatment. I once raised a nail slowly, with lint beneath it, so that in a week the corner was cut off, and the patient never again suffered. But you are generally obliged to remove the nail or a part of it. The patient is etherized, and if the nail is thin, you thrust one leg of a pair of forceps under it to the root, shut the forceps upon the nail, twist it first to one side and then to the other, and extract it, as was done here. If it is thick, first split it to the root with scissors thrust under it, and peel off one or both halves from tip to root, with forceps. These nails came out whole, but the nail should in general be examined after extraction to see if the corners of the soft root are square, as a bit is often left in at the edge which reproduces the deformity. A new nail generally appears, sometimes deformed. In this case, Dr. Hayward removed three nails.

CASE V. *Fatty Tumor inside of Cheek. Operation.*—This middle-aged woman perceived this tumor 4 years ago. Its position, just inside of the labial commissure under the mucous membrane, is a common one for little sacs containing glairy fluid. This looked like one, and fluctuated; but proved to be common adipose tissue, as large as a chesnut. I removed it with a simple incision. The ether was continued to this patient sometime after narcotism, and until she snored; her pulse being only reduced a little in frequency. This thorough dose lasted her through the operation. With a common dose, she would soon have partially waked, shut her mouth, groaned and twisted about; and after vain efforts to get along, we should probably have stopped the operation to give her more ether. As it was, she slept tranquilly through it.

CASE VI. *Disease of Antrum. Operation.*—This patient of Dr. Hayward, 32 years old, a year ago perceived a swelling just under the edge of the left orbit. When opened, it discharged pus. Soon an open-

ing formed spontaneously over the second molar, thought to be a gum-boil, but a copious and daily discharge of pus here discredited this idea. The patient applying to a surgeon, a probe was passed into one opening and out of the other, traversing the antrum ; since which, this antrum is said to have been punctured twice, and a seton to have been once passed. Lastly, foetid pus has been and is now blown from the nostril.

Here is a well-marked affection of the antrum ; and attention may be directed on the one hand to the mucous membrane and bone of the cavity itself, and on the other to the fang of a tooth and abscess of the gum, as the usual causes of such purulent accumulation in this sinus. Here the first pus escaped near the orbit, where there is now a scar ; and the discharge is now foetid ; considerations which direct us to the antrum and to the bone. It is a case difficult of treatment. The patient was desirous of an opening into the cavity, which Dr. Hayward made by boring through the thin shell just above the second molar tooth. Some of you may remember a similar case in my wards last year. Great pain and tension on the left side was then relieved by tapping the antrum in this same place. Pus escaped ; and the patient, encouraged by the success, was very desirous to have the other side opened ; there being an uneasy feeling there. I advised him against it, for want of indications ; but subsequently, as the operation is in reality a small affair, yielded to his solicitation. There was no pus, and the jaw swelled largely. In the first instance the opening evacuated pus and was a relief. In the second, it was an injury to a comparatively sound part, and was at once felt. As to the operation, if you do not perforate the socket of a tooth, you find the base of the zygomatic arch above the molars ; incise the mucous membrane freely, and expose the bone ; otherwise the blood is apt to distend the tissues, and make the landmarks obscure. You then bore through the thin bone with any convenient instrument. I have used a three or four square pyramidal point.

CASE VII. *Hydrocele.*

CASE VIII. *Hydrocele.*—Two more cases, illustrating the varieties of this affection. One in a young man, and of 3 or 4 years standing ; the other in an old man, and of 8 or 10 years duration. The former and smaller had a constricted middle, giving it an hour-glass shape. The latter was the longest and narrowest I have seen ; extending from the ring to the bottom of the scrotum, nearly 7 inches, and only 2 and 3 inches in diameter. These forms are accidental ; both were translucent. The small one was injected with a drachm of tincture of iodine and a

drachm of water, of which half was withdrawn. The other operation was only palliative. It is generally not worth while to expose a very old person to the risk of inflammation; though I have operated upon a man above 80, by incision, and successfully; yet it is generally better not to do so. As an example of the effect of the palliative operation, I may mention the case of a man of nearly 90, whom I tapped six years ago, and only twice since; the fluid collecting slowly; and the risk or pain of the puncture is small. You can diminish the pain by thrusting the instrument suddenly in and not slowly. Of course you make the sac tense and thin, avoid the testicle, and guard the canula with your forefinger at a short distance from the point to prevent it from plunging too deeply. A patient who had before been operated upon slowly, remarked to me, after this sudden puncture, that he must have been before tapped with a screw auger. Another point in the radical operation, is to carry the canula well home into the sac, and to hold it there by pinching the sac, otherwise you may inject the cellular tissue instead of the cavity of the tunica vaginalis.

The two other patients have gone out well, each in two and a half weeks from the operation. In one, there was at the end of the first week a distinct crepitus on pressure of the sac; no doubt from the breaking of little cells of lymph containing water. It is interesting, in connection with a rare and exceptional subcrepitus due to the same cause in the pleura; and which is to be distinguished from the moist râles of the pulmonary cells and tubes.

CASE IX. Stricture of the Œsophagus. Dilatation.—The pathology of this affection we reserve for another day. The difficulty, to those unaccustomed to its use, of passing the probang, consists mainly in its being brought up hard against the vertebræ behind the pharynx, if the instrument is stiff. To avoid this, the head is thrown well back, and if need, a finger of the left hand carried past the epiglottis to bend and guide the instrument in the Œsophagus. By doing this, you will avoid the danger of pumping a pint of broth into the lungs with a stomach pump, as was once done.

MONDAY, JAN. 20, 1851. CASE I. *Fatty Tumor beneath Fascia.*—The first patient upon whom you saw an operation performed on Saturday, was a boy with a large tumor extending round the arm in the deltoid region. It was of seven years gradual growth, and had now become bulky and inconvenient. It offered some quite uncommon features. Large fatty tumors are common enough in this region. I removed one weighing four and three quarter pounds from the arm of an old lady who was soon quite well. “*Shoulder-strap tumors*,” which lie over the outer triangle of the neck, are popularly supposed to be produced by the rubbing of the dress upon the shoulder, and are of this nature. The back is a common place for them; and the female breast also. In short, they grow almost everywhere, and directly under the skin. I had one patient in whom the existence of six or eight in various places, showed the disease to be constitutional. From all these places the removal of the fatty tumor is usually a small matter; excepting, perhaps, the back of the neck. The mass lies in the cellular tissue; and where this is lax, by distending it, it grows with few lobes; but where the surrounding fibres are dense, they cut it up into numerous lobes. Now the fatty tumor has a habit of getting through an aperture in the cellular tissue or anything else, and of growing upon the other side into a lobe too large to be drawn back through the same hole; so that you must cut or tear the band of fibres at the neck of each lobe, and then the whole mass very readily and neatly turns itself out of its bed. But suppose the cellular tissue to be so dense and close, as about the *ligamentum nuchæ*, that you cannot tear it; while for the same reason the tumor has been cut up into a great number of little lobes, each tied by its neck into a little cavity; to dissect all these would be endless; and you are obliged, as has twice occurred to me, to take out from the back of the neck the whole mass, wrapped up in the cellular tissue. It is quite like removing a breast, but less easy because there is more resistance; and this even where the tumor has previously seemed to be very loose and moveable. Elsewhere, cut well down upon the tumor; keep it dissected clean; cut on the tumor and not into its neighborhood, and you will have no difficulty. In the present case you saw six inches of the brachial artery and vein dissected quite clean and exposed. You often hear of large vessels being exposed in the removal of a tumor. Do not get the idea that they are purposely denuded, or that such a dissection is made with the intention of enucleating them. It is not so, and you will readily see how it happens. A tumor grows beneath the fascia, and presses upon the neighboring cellular tissue, which is absorbed before it until in fact it lies directly against

a large artery and vein. Now you will find that in dissecting, you can often draw the tumor away from these vessels, so that keeping the edge of your knife always against the tumor, it may, perhaps, never be nearer than an inch, to the vessels; and yet when the mass is out, and you examine the bed in which it laid, you will find the large artery and vein just as near to the surface as they were to the tumor; perhaps, as in this case, bare, and directly upon the surface.

The present tumor extended quite round the arm, beneath the long head of the triceps, and on the inside had pushed under the brachial artery and vein. It was also traversed by an artery as large as the facial, and indented by the internal cutaneous nerve. It began, small, near the insertion of the deltoid. I stated to you that it had all the feel of a fatty tumor; lobulated outside; less so, but large and fluctuating, on the inner aspect. The only doubt was in the fact that fatty tumors do not belong beneath the deep fascia, where this evidently was. They almost always grow directly under the skin. I never saw one thus deep, before. Yet such are recorded, one beneath the trapezius and one beneath the mamma. So that in making the diagnosis, I mentioned fatty tissue as the probable material, apart from its anomalous position which made it a little doubtful. I made a long incision inside the biceps, and separated the tumor from the artery, vein and internal cutaneous nerve. A parallel incision six inches long was then made outside the arm near the triceps, and the chief obstacle to the removal of the tumor was found to be its close attachment here by its membranous septa to the periosteum itself. These divided, the aperture beneath the triceps was dilated up and down, and the tumor was then drawn out through this opening under the muscle and the external incision. It weighed one pound and four ounces.

CASE II. *Disease of Ankle-joint. Amputation.*—This patient, from Dr. Hayward's ward, had during a period of seven years more or less pain and lameness in the joint. For a year he has been unable to use the limb, and during this time quite a number of fistulous openings communicating with the joint, have appeared; I believe a dozen—an unusual number. The joint is, you see, swelled and blue, and the leg atrophied, almost to the bones. About such a leg there can be no doubt. Whatever the disease may be called—scrofulous disease, pulpy, cartilaginous or synovial degeneration, or disintegrating lymph, there is, practically, very little hope in a case of this sort. In a favorable case, the diseased cartilage and bone should and might become disintegrated

to a point which leaves sound bone, and this in its turn should become ankylosed. This is the only recovery from such a mass of disease. But in the mean time the pain and fever are reducing the patient; the liquor sanguinis is drained by the discharge of pus, and the strength gives out. There is a peculiar disease, the ulceration of the cartilage, in which a small ulceration in an otherwise apparently sound cartilage is productive of great pain, and often compels amputation of a limb. But the present affection, which is by far the most common one, exhibits no clean ulceration. You see in this joint a part of the cartilage roughened; elsewhere more deeply pitted, and largely detached; the bone exposed; masses of granulation; the whole articular surface greatly diseased, and very little or no sound cartilage. The affection has also extended to the tarsal articulations. The progress of this sort of disease is usually not steady, but by repeated exacerbations, with intervals of comparative freedom from pain; and the patient may be reduced so gradually that it is sometimes difficult for the surgeon who sees the case, day after day, to decide the precise point at which treatment should be abandoned, and amputation resorted to. Seeing the same case for the first time, you would have less difficulty in making up your mind.

A patient greatly reduced by a diseased joint, often recovers rapidly after its removal. Yet even then, life sometimes flickers feebly for a time, and the patient sinks under the shock of amputation. Perhaps the chief point to be settled, in respect of strength, is the soundness of the great viscera; for with disease there, and in spite of a few recorded cases to the contrary, the case is almost hopeless.

This limb, long past the stage of doubt, was removed by Dr. Hayward, by the circular operation.

You will hear much of the relative advantages of the circular and flap operations. But as there is so much diversity of opinion upon this point, you may be sure there is no settled best way; and as for the rapidity of amputation, if ever it was a prime object, with ether it is now no longer so. The one thing needful is skin enough to cover the bone. If one side of a limb is ulcerated or injured, you get it from the other side, and this is a flap; or you may make two flaps—on the sides, or top and bottom, or as you please, so long as you cover the bone and do not waste material; for the best artificial limbs are now made with deep sockets, and the longer a stump is, the better. This flap was circular, and the stump will be doubtless an excellent one, reaching two thirds way to the ankle. Accidents may happen to all stumps. Flaps retract, bones protrude and sequestra come out. But if

the bone is once properly covered, nature has much more than the surgeon to do in keeping it so. I once had an opportunity to try the circular and flap operations upon the legs of the same patient; a case of mortification of both legs, after dysentery on shipboard. The patient was at death's door, but at once rallied after the removal of the legs at about their middle. It was soon after the use of ether; and the patient, of course, slept through both amputations. Both wounds healed by first intention. The circular flap was puckered in healing, as it generally is. Upon the other leg, the long flap from behind gave apparently much the best result; a handsome rounded stump, with a linear cicatrix. Yet it is probable that a few years would make them much alike. The muscle and fat of a large flap is then atrophied and the roundness lost. This I may state also as the view of Dr. Townsend, whose opportunities for examination were frequent during the last war.

CASE III. *Necrosis of the Humerus. Operation.*—The disease was in this case of fifteen years' duration. There were a number of fistulous openings about the deltoid, leading to dead bone. A large one also between the clavicle and scapula above, traversed by the omo-hyoid muscle, which bisected it. Water injected here, was followed by an increase of pus at the lower opening, in the course of the day. I am unable to say why the pus, which was burrowing about in the axilla, should have made this large ulceration so high up; or whether this depended on a separate cause. As you saw, I made a free incision down to the bone on the outside, and through the deltoid; waited for the capillary bleeding to cease, and tied a small vessel or two; denuded the bone, removed a middle-sized disc of new bone quarter of an inch thick, with a trephine upon a bit-stock, and extracted through the opening a sequestrum in shape like a large almond. The object of these operations is to get at and remove a sequestrum which is confined by bone, generally of new formation and thick. In such a case you feel with a probe a bone unequivocally loose and apparently quite accessible; you cut through the soft parts in pursuit of it, and are suddenly, perhaps to your surprise, arrested by a bony wall with an aperture only as large as a crow's quill, into which the probe passes perhaps half an inch. The old way was to attack this with a chisel and mallet. But put a femur into a common vise, and try with a chisel and mallet to expose the interior of its shaft, and you will find how slowly the work goes on. Now there is a French instrument which I have used for a number of years, which consists of a small circular saw, attached to an iron rod, which receives

its revolutions from a bit-stock in the hands of an assistant. The rod is about two feet long, and is broken for convenience by a universal joint. A hole is trepanned into the bone, and if the sequestrum is refractory, another hole is also trepanned a few inches distant, and the circumferences of each united by parallel lines, so as to make an oval hole. This last is done by the circular saw (*scie à molette*), and the little time it occupies and the facility of its work are quite striking. I should say it required about one minute for ten consumed by the old process; and a beautifully symmetrical hole may be made in five minutes, which would require half an hour's work of the chisel. This is really an advantage of importance. Here are sequestra which I have removed in this way; a long one from the femur; this one, not unlike a butternut in size and roughness, and moreover infiltrated with salts from the saliva, from the left ramus of the jaw. Here is a very remarkable sequestrum from a boy, a patient of Dr. Osgood, of Saxonville, which is actually two thirds of the humerus. Its upper extremity projected through the skin just under the axilla, while the whole articulating surface at the elbow was salient and exposed obliquely outwards. The whole looked somewhat like a large spike of which the condyles represented the head; driven in obliquely at the elbow, and its point appearing under the axilla. And here are the marks of the boy's penknife upon the exposed joint, where he amused the tedium of convalescence by whittling it *in situ*. You would have thought, as I did, that it could be pulled out from below, with ease. But it was so bound and clamped by new bone, which pinched it, that I was obliged to remove the last to some extent before it yielded. And it is strange that the boy has a serviceable joint at this day, traversing an angle of about 45° .

Here is another sequestrum with a wisdom tooth in it, larger than you would suppose could be contained in the ramus of the jaw. Necrosis is sometimes rapid. I removed this from a patient of Dr. Dale. It was eliminated from the first metatarsal bone of a boy in a few weeks, and is, as you see, quite a piece of the shaft.

This operation has its reverses. Here is a femur of a patient, of two years ago, in a case where the fistulous opening was directly in the track of the artery, and where it could not be pursued. I therefore attacked the bone upon the outside through the vastus externus, and made this opening into it. The patient, a healthy laborer, died the next day of a remarkable affection; a secretion of pus beneath the layers of deep fascia and into the muscles of the whole thigh, showing universal inflammation there. Besides which, before death, the limb was inflated by gas as in a decomposing subject.

There are a few points of diagnostic interest which should be mentioned. The size of the sequestrum may be judged of, sometimes, by the enlargement of the bone, and by exploring it through different apertures. Yet where it is deep, and where these signs fail, the size of the dead bone may be deceptive, and a very small one may give the idea of being large. Its mobility is sometimes unequivocal; and upon this point there are two signs I have noticed, not, I believe, mentioned in the books, to which I attach some value. One of these is the possibility of causing pus to escape from one fistulous opening, by pressing upon the sequestrum with a probe through another and separate aperture. How is this likely to happen, unless the sequestrum moves? Again, pain, not a common local and acute tenderness, but a deep and distant pain, sometimes attends the forcible movement of a large sequestrum by a probe in a fistulous opening. The sequestrum is then tilted against soft granulations at a remote part of the cavity. In such cases, the sooner the sequestrum is removed, the better. The pathology of necrosis belongs to another part of our surgical course.











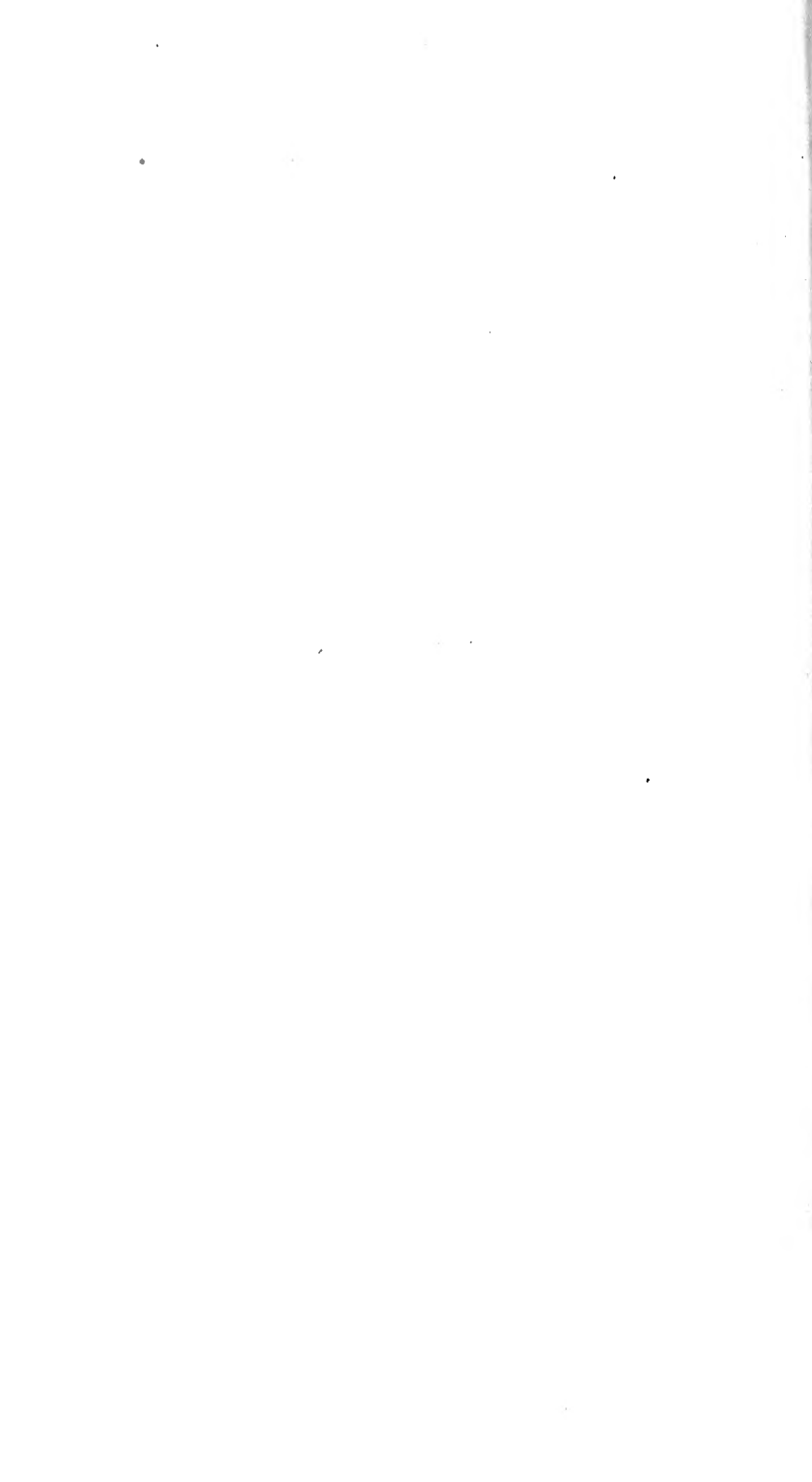


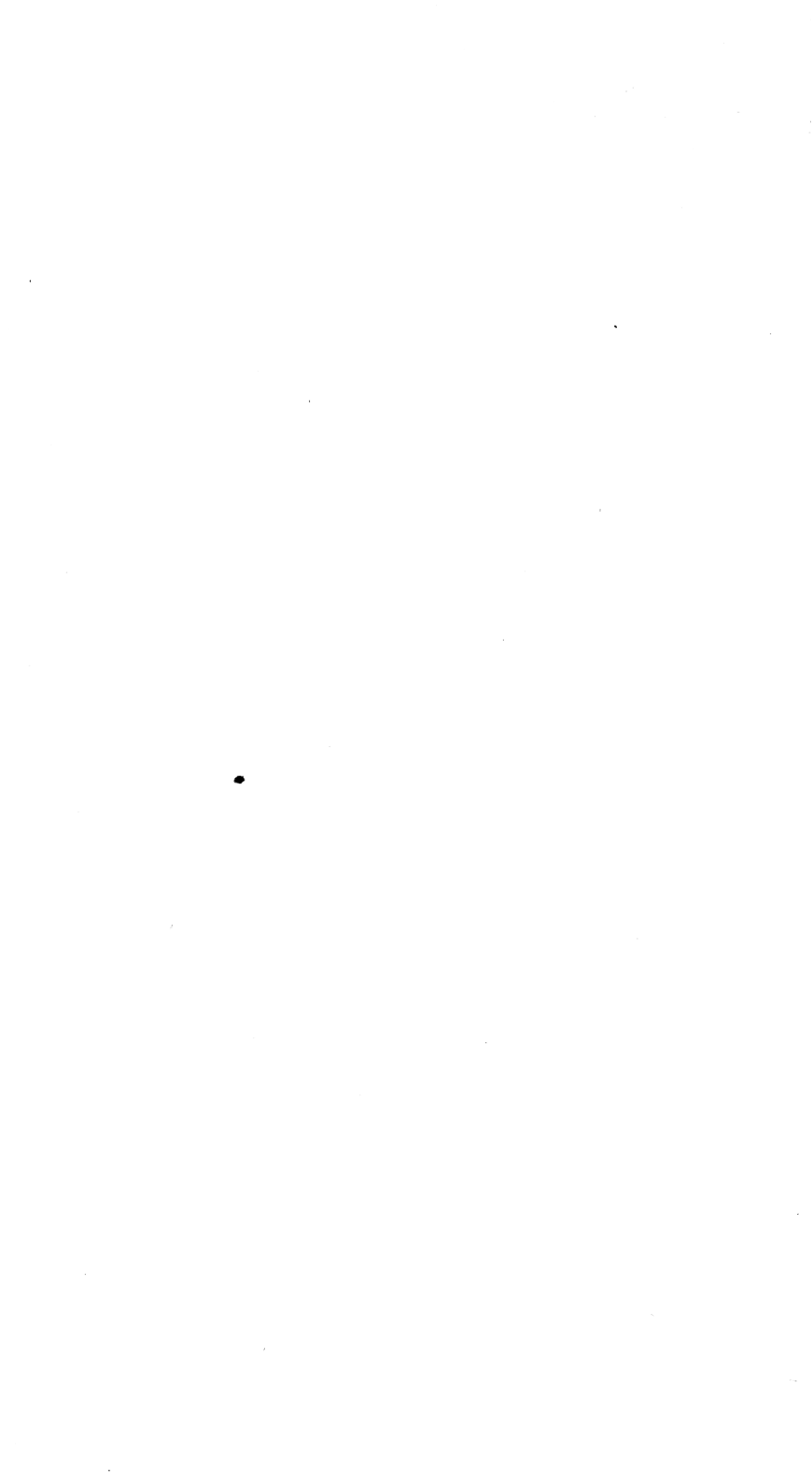














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